

The Plough, the Loom, and the Anvil.

VOL. I.

FEBRUARY, 1849.

No. VIII.

THE TRUE AND PROFITABLE MODE OF DIMINISHING THE SURPLUS PRODUCTION OF COTTON.

WE have desired to impress upon the minds of our readers the great truth that "population makes the food come from the rich soils, while depopulation drives them back to the poor ones," and that if they desire to bring into activity their river bottoms, their swamps, their marl, and their lime, it can be accomplished in one way, and one alone, and that is by bringing to their sides the loom and the anvil, that those who drive the shuttle and strike the hammer may eat on the ground the food that is needed for their sustenance while engaged in converting the wool into cloth, and the ore into iron, for the use of those who produce the food. Had we needed confirmation of the correctness of this view, we should have found it in the message of Governor Johnson, of South Carolina, an extract from which was given in our last number, (page 433.) He tells us that scarcely any of the productions of the State, cotton excepted, will bear transportation to market; that it is cheaper to import grain from the Northern States to the towns and cities on the seaboard, than to bring it from the interior of the State; and that lime may be imported from Maine into Columbia, sixty miles inland, at less cost than it can be obtained from the vast deposits within the State itself. She has few consumers at home; and she makes no roads; and the reason why she does not is, that her population is so widely scattered that the cost of making them is greater than can be borne. It is the land of free trade and abstinence from governmental interference, and yet the people are unable to make roads without governmental aid. Canada is in a situation precisely similar. She has no consumers, nor can she have; for *she has perfect free trade with Britain*, and is thereby impoverished, and she has thus far but twenty miles of railroad. India wants consumers that she cannot have *while she shall continue to have perfect free trade with Britain*, and therefore India makes no roads. South Carolina can send to market cotton, of which the earth yields by pounds, and so can India; but neither of them can send to market food, of which the earth yields by tons; and they have on the ground no consuming population to bring it forth.

South Carolina is becoming depopulated, and the necessary consequence is that men fly from the vicinity of rich lands to seek the poor ones at the heads of the streams in Texas, or Arkansas. She makes no roads, and her chief city is supplied with hay and grain from the North, while meadow lands abound, and swamps and river bottoms ask in vain for drainage to enable them to furnish tons of food for men, and horses, and cattle, in place of the pounds of cotton, or pecks of corn that are obtained in "the mountain region" of the State. Lime abounds, and fuel abounds, and poor soils, whose produce would be trebled by aid of lime, abound, yet it is found cheaper to import it from the northern extremity of the Union, than to quarry and transport its own. The State is almost destitute of consumers, and *therefore it is* that she is dependent upon other States for large supplies of many of the products of the earth, while other States are enabled to supply those products *because* consumers are numerous. In every part of the

earth, and in every age, it has been seen that in every advancing nation the supply of food has grown faster than population, facilitating the acquisition of the necessities and comforts of life, while in every declining one the supply has diminished more rapidly than population, the difficulty of obtaining the necessities of life increasing with the diminution of numbers. Let our readers cast their eyes over the world, and they will see that among the most scattered people starvation is a matter of constant occurrence,* while if they desire to find the people who consume most largely, they must seek them in the densely peopled Belgium, in England, and New England.

What is now true of South Carolina bids fair speedily to become true of others of the Southern States. Their whole system is one of exhaustion, followed by emigration. Men now fly from Alabama, as heretofore they have flown from Maryland, and Virginia, and Carolina. In every Southern paper we are struck with the number of "movers,"—of men who are abandoning the vicinity of rich lands to seek in the West poor ones similar to those they have already exhausted, for exhaustion must come wherever men are unable to return to the land the refuse of that which they take from the land. The effects of the system are well described in an address recently delivered before the Georgia Agricultural Society, by Mr. W. Tyrrell, represented to be the owner of three thousand acres of the best cotton lands of that State. From that address the following is an extract :

"Unless we reform our present system of tillage, we soon shall be absolutely ruined. By excessive cotton culture we are fast bringing about a state of things in which our negroes and our lands will be alike worthless. The abandonment of our old and worn plantations in Georgia for the cultivation of the fresh virgin soils at the Southwest, which has served the turn of so many when cotton was at a fair price, will not be available under an entirely different condition of things, in the markets of the world. As the latter change in the progress of nations, unless we alter our system of agriculture, and wisely adapt it to the wants of civilized man, what has hitherto been to us a prolific source of wealth, will hereafter bring to us poverty and degradation. Abolitionists need not trouble themselves about the manumission of our slaves, nor politicians about establishing *new competitors* in planting, in California and New Mexico. The competition will soon reach a point where the ownership of this species of property will cease to be profitable or desirable, unless we produce breadstuffs, wool and provisions, as well as cotton ; and thereby *improve* instead of *exhausting* our lands."†

Everywhere throughout the South, the excessive cotton culture is spoken of as the cause of the present depression, and as likely to be the cause of the total destruction of value in labor and land, to be attended with ruin to their owners. Such being the case, we might naturally suppose that there had been a very great increase in the product by which the markets of the world had been overwhelmed ; but that no such increase had taken place, we propose now to show, in proof of the proposition that where the consumer does not take his place by the side of the producer the exhaustion of the land, attended with *diminished* returns to labor, is a necessary consequence.

In the following table we give the amount produced, the average price, and the sum estimated to have been yielded by the crop for the years from

* The most populous part of Ireland (Ulster) is, even now, comparatively prosperous. The most distressed is that in which the population is the least dense, Connaught. The present state of that unfortunate country is due, not to over-population, but to over-taxation by the government, the landholders, and the manufacturers of England. Of what is taken from the land nothing goes back upon it.

† These views in relation to the question of slavery, and the effects of diminished production on the condition of the slave, are very common, but they are incorrect. See the question discussed in our last No. in the letter from Mr. Carey to Mr. Appleton. They show, however, the probable destruction of the value of all property from the want of that diversification of employments which arises when the loom and the anvil take their place by the side of the plough.

1840 to the present time, and an estimate for the crop now coming into market.

1840	870,000,000 pounds	.	.	8·6 cents,	.	.	\$74,820,000
1841	654,000,090	"	.	10·2	"	.	66,708,000
1842	674,000,000	"	.	8·2	"	.	55,468,000
1843	952,000,000	"	.	6·0	"	.	57,120,000
1844	812,000,000	"	.	8·1	"	.	65,772,000
1845	958,000,000	"	.	5·9	"	.	56,522,000
1846	840,000,000	"	.	7·8	"	.	65,520,000
1847	711,000,000	"	.	10·1	"	.	71,811,000
1848	940,000,000	"	.	7	"	.	65,800,000*
1849	1020,000,000	"	.	supposed	5	"	51,000,000

The average product of the last three years is 890,000,000, being almost precisely the same as that of 1840, although the population of the cotton-growing States must have increased twenty-five per cent. or considerably more than a million of souls, and although all the energies of this greatly increased population have been given to the extension of the cultivation of their great staple. The reason for this is to be found in the fact that men are everywhere exhausting the land, impoverishing themselves, and flying to seek new land, when if they were to return to the land the refuse of its products, they would become rich, and thus be enabled to clear and drain the richer soils, by which they are everywhere surrounded. Throughout the whole South the tendency has thus far been in the same direction in which have travelled Maryland, Virginia, and South Carolina, which abound in fertile soils, from which men are flying as if from pestilence, while those who remain cultivate large surfaces of exhausted lands, from which they obtain small crops.

To all this the South Carolinian would answer that he had been exhausted by the tariff—that if he had had perfect free trade with Great Britain, and with the world, he would have grown rich, because of the increased demand for cotton that would have resulted from his own increased power of consuming cotton fabrics; but that he has been taxed for the support of avaricious manufacturers at the North, who have grown rich at his expense, while his market has been diminished by reason of his diminished power of consumption, in consequence of having to give forty bales out of a hundred for the support of monopolists, &c., &c.

How far this view is borne out by facts, we propose now to inquire:

The consumption of the British Empire for the three years previous to the last has been as follows—in millions of pounds:

	1845.	1846.	1847.
United Kingdom,	157	141	74
Colonies,	85	87	67
	242	228	141†

The colonies of Great Britain enjoy all the *advantages* of perfect free trade, which should, according to many of our teachers, produce the highest prosperity, and yet their power of consumption tends to diminish when it should increase, because of the exhaustive nature of their trade with the mother country. The latter is determined to be the great workshop of the world, and that she may be so, India is compelled to send cotton produced at a distance of sixty days' journey from the Ganges, and rice to feed the man

* For this table, and all others used in this article, except when specially acknowledged to be derived elsewhere, we are indebted to an article on the Cotton Trade, by Professor McCay, of the University of Georgia, published in the Merchants' Magazine of December last.

† Burns's Glance, quoted by Professor McCay.

who is to twist the cotton, and then after the lapse of perhaps a couple of years, the same cotton and rice find their way to the hills in the form of cloth, to be consumed by the producer of cotton, who obtains one yard where he would have five could he manufacture it at home, and cultivates poor lands while surrounded by rich ones that he is unable to clear or drain. His position and that of the South Carolinian are precisely the same. Both *would* make their exchange at home if they *could*. Both are *compelled* to make their exchanges abroad, at great loss of labor and manure, and this they call freedom of trade!

The exhaustive nature of the process is manifested in the diminished consumption at home as well as abroad. Ireland can have no manufactures, and she is ruined because she, like the other colonies, is compelled to waste on the road, and in idleness, the labor that should be applied to the conversion of food and cotton into cloth, and food and ore into iron. Her power of consuming cotton is daily diminishing, as is that of the north and west of Scotland.

The export of cotton yarn and cloth by Great Britain to other countries has been as follows—in the first six months of

	1845.	1846.	1847.	1848.
	Millions of Pounds.			
European States, . . .	100	94	69	81
All other countries, . . .	65	52	69	49

Throughout the whole of Europe there has been a determination to throw off the colonial system, and to bring the consumer, with his loom and his anvil, to take his place by the side of the plough and the harrow of the producer, and the result may be seen in the gradual decline of the export of cloth and yarn to the continent. Has that, however, been attended with a diminished power of consuming cotton? On the contrary, the continental consumption of American cotton, which was in 1844 but 309,000 bales, rose in 1845 and 1846 to 437 and 450 thousand, and is estimated this year, notwithstanding the disturbances, at 420,000. In 1847, because of the high prices, it fell to 340,000, the reduction being in nearly the same proportion which the production of that year bore to the average of the two previous years.

The advantage of trading directly with the consumer of cotton, thus superseding the necessity for depending on English merchants and English mill-owners, and diminishing the machinery of exchange and the cost of exchange, will be seen from a comparison of the regularity of movement in the *direct* with the great changes in the *indirect* trade, as follows:

	1845.	1846.	1847.	1848.
Direct, bales, . . .	437	450	309	420
Indirect, millions of pounds, . . .	100	94	69	81

We see that the export to "all other countries" has undergone great changes; having been 65 in the first half of 1845, falling to 52 in 1846, rising to 60 in 1847, and falling to 49 in 1848. The downward tendency of the system is here made manifest. It was arrested in 1847 by the repeal of our tariff of 1842; the effect of which was to cause a vast influx of cotton goods into this country, the 14 millions of yards of the first six months of 1846 being replaced by 49 millions in 1847, making a difference of about 8 millions of pounds. In 1848, the 49 millions fell to 33. If, now, we deduct the increase in the trade with this country, we shall obtain the following quantities as the export to all "other countries" than the European states:—1845—65; 1846—52; 1847—61; 1848—43. The natural tendency is to have the loom seek the plough, and there exists in almost every part of

the world that exercises in that respect the power of self-government, a determination that it shall take its natural and proper place.

The export to France of the crop of 1847, was 241,000 bales. In 1848 it increased to 279,000 bales.

Here, at home, the consumption has grown with remarkable rapidity; and here we have exhibited in full force the beneficial effect of the approximation of the plough and the loom.

Year.	American consumption. Bales.	Average for three years. Bales.	Increase, per cent.	Year.	American consumption. Bales.	Average for three years. Bales.	Increase, per cent.
1843 . .	325,000	305,000	3.4	1846 . .	423,000	386,000	9.0
1844 . .	347,000	321,000	5.2	1847 . .	428,000	413,000	7.0
1845 . .	389,000	354,000	10.3	1848 . .	523,000*	458,000	10.0

The consumption has thus increased almost 60 per cent. in ten years; and whereas the advance of 1843 over the average of the three preceding years was only 3.4 per cent., that of 1845 over the then preceding three years was about ten per cent.; and that of the past year, if here correctly represented, is equally great when compared with the three past years.

The change that has taken place in the last five years is most remarkable; and shows the advantage to the planter of the system that tends, by diversifying the pursuits of a nation, to render productive its whole labor power.

In 1845, the quantity consumed by the people of the British empire, was . 242 millions. While that consumed by the people of the United States was about . 170 "

In 1847, the consumption of the former had fallen to . 141 " While of the crop grown in 1847, the consumption of the Union has been 243 "

Among the most important facts is the steadiness of the growth of the home demand, compared with the unceasing fluctuations of the foreign one; and thence may we derive a useful lesson as to the importance of looking more to our home markets, and less to those abroad, than we have been accustomed to do. It is impossible to trace the history of the last twenty-five years without being struck with the extraordinary revulsions resulting from changes of policy on the part of the government and the monetary institutions of Great Britain, against which no one could guard, and which have, consequently, spread ruin in every part of the world connected with that country, *and exactly in the ratio of their intercourse with her.* The people of the Union have suffered most heavily in times past; and if they have on this occasion escaped comparatively unharmed, the fact is due to the increased independence that has resulted from the existence of the tariff of 1842.

The great cotton consumers of the world are now the people of the Union. Being only 21 millions in number, their power of consumption is greater by fifty per cent. than that of the almost countless millions of British subjects; and their power in this respect has been increasing, while that of all the colonies of Britain has been diminishing. Great, however, as it is now, it gives but eleven pounds of cotton per head, or an average, after deducting that which is used for other purposes than clothing, of about 35 yards of cloth

* "The New York Shipping and Commercial List, which is the highest authority on the subject, gives 607,000 bales as the American consumption for 1848. Of this 523,000 bales was delivered to the factories at the North, and 75,000 was the estimated consumption at the South and West. This estimate is probably too low. Certainly the amount allowed for Georgia is not so large as it ought to be."—*Professor McCay.*

It must be borne in mind, that, by the consumption of 1848, is meant that of the crop that commenced to come to market in September, 1847, and closed in the summer of 1848. The power of consuming cotton at home was maintained during that time by the effect of the famine in Europe in 1847; but since that time many mills have been closed, and there is now no disposition to build new ones, for those in existence are working without profit, and frequently at a loss.

to each. This is less than one-half of what would be consumed, were the labor power of the nation rendered productive by the close approximation of the loom and the anvil to the plough and the harrow. Were the policy of the nation such as would enable the farmers and planters to obtain in their immediate neighborhood the furnaces, the forges and the rolling-mills, the cotton and the woollen mills, required to supply their wants, and to give them a market on the ground for their surplus food and surplus labor, now to so vast extent wasted—and to enable them to save the labor now wasted on the road—and the manure now wasted on the road and in distant markets—the home consumption of cotton would probably rise to 400 millions within less than seven years.

Had the tariff of 1842 been, from the first, adopted as the settled policy of the nation, there would be, at this moment, in existence at least a hundred cotton mills, and possibly treble that number, more than we now have. Allowing, however, only 150, and the consumption of each to be but 1000 bales per annum, here would be a demand for 60 millions of cotton, accompanied everywhere by a greatly increased power of consumption, because of the increased value of labor and land. The substitution of the tariff of 1846 for that of 1842 made during the first year a considerable market for the products of English looms; but the effect has been general impoverishment; and while many mills have been closed, the building of others has been arrested, and the market for foreign cloths has already, even in the present year, fallen to two-thirds of that of 1847.

Year.	Calicoes,			Calicoes, plain.	Other cottons.
	printed and dyed.	Yards.	Yards.		
1845 (First six months of)	.	8,803,000	7,963,000	4,809,000	
1846 "	.	6,360,000	5,367,000	2,480,000	
1847 "	.	20,972,000	22,131,000	5,734,000	
1848 "	.	19,220,000	9,950,000	3,996,000	

The consumption of 1848 over that of 1846, consequent upon the change of tariff, is less than twelve millions of yards, or as much as would be produced in eight mills, consuming cotton at the rate of 2000 bales per annum. The cotton-growers have gained these eight; and they have lost a hundred and fifty that would be now in existence, had the tariff of 1842 been adopted as the settled policy of the country.

The power of consumption in the South, at the present time, is less by one-third, so far as that power is derived from cotton, than it was nine years since, notwithstanding the vast increase of population. The crop produced in 1839 paid for commodities and things required by the planter and his hands to the extent of 74 millions of dollars, whereas that of the present season gives a purchasing power to the extent of only 51 millions. Had this power grown only with the growth of population, it would be 92 millions; but it ought to grow more rapidly, and should at this moment far exceed 100 millions; whereas it is but 51 millions. Had the tariff of 1842 been adopted by the South, and were we now consuming a hundred and fifty thousand bales more than we now are, as we should be doing, the balance would produce more in the markets of the world by probably thirty millions of dollars than we now obtain for the whole. The planter would thereby gain not only these 30 millions, but the price of the 150,000 bales in the bargain; and, in addition, he would have been improving his land by the cultivation of food to be consumed at home, instead of raising cotton to be sent abroad. In estimating it at 150,000 bales, we feel well assured that we are far short of the truth. The growth of the power of consumption, when men are enabled to live together, combining their efforts to make their joint labor productive, can scarcely be estimated. The consumption

of iron doubled from 1843 to 1847, and the prosperous makers of iron consumed largely of cotton. The furnaces and rolling-mills are being closed, and the consumption of cotton is being reduced. Had the South adopted the tariff of 1842, the products of iron would have gone ahead still more rapidly, and more cotton would have been consumed, and the price of cotton would have been higher, enabling the planter to make railroads on which to use the iron, and thus to get his cotton to market more cheaply, and thus to accumulate the means to improve his plantation, and to build mills, and thus to augment the demand for iron. Every step in the approximation of the consumer to the producer is a gain to the latter. Every step in the opposite direction is a loss to him.

Everywhere throughout the South there is an impression that there is an over-production of cotton, and that it must be reduced. What would have been the state of affairs but for the vast increase of the home demand? England could consume no more than she does at present. Her colonies have that perfect freedom of trade for which the Carolinian sighs; yet their consumption diminishes, and *it increases nowhere but where there is protection.*

The difficulty does not consist in *over*-production, but in *under*-consumption. Let the planter make a market on the land for the products of the land—let him pursue the course that is needed to give to every county in the Union its place where cotton, or wool, or iron ore, can be converted into cloth or iron, thus making a market for the surplus labor and food, and saving the manure; and before two years shall elapse the demand will overtake the supply, enabling him to realize abroad for what can be spared to go into the general market of the world such prices as will give value to his labor and his land. Everywhere throughout the South there exists a desire for combination of action to diminish the supply, but these are weak inventions that can result in no advantage. They want combination of action *to increase the demand.* The supply can be diminished in one way alone, and that is by making a market for food; and that can be done only by bringing the consumers of food to take their places by the side of the food and the cotton. Let that be done, and the *power* to produce cotton will grow, while the *necessity* for depending on cotton will diminish; and with each step the planter will become a more independent being, enjoying more and more that *real freedom of trade* which results from determining for himself what he will produce and where he will make his exchanges, instead of that *bastard* freedom of trade which consists in raising cotton, because he can raise nothing else that will sell, and sending it abroad when he would prefer to exchange it at home.

We take the following from a late number of the Carolinian:

"We are the slaves of tyrannical systems, and must work out our own redemption at home:

'Hereditary bondsmen, know ye not, who would be free,
Themselves must strike the blow?'

"Yes, there is reason for all the distress which pervades the country, and that reason points to the remedies which are to be used in the cure of the disease. Economy and independence furnish the words of the magic key.

"Let the planter make himself independent by producing all that he consumes, and he will soon see where the secret of success lies. The bread that he eats—the animal food that he consumes—the steeds which he rides and drives—the mules which perform his farm labor—the wool which clothes his laborers—the leather for shoes and harness—all these things are sold to the planter at a profit; and when he pays for them out of his cotton crop, it is all swept away. Let the planter make all that he can on his plantation—let him rear all the domestic animals he may desire for use, or more if he can, and let him plant marketable crops, not for exchange as he now does, but for cash to be paid to him, to be invested permanently, or to be spent in the education of his children, and he will find that instead of every year growing poorer he is actually growing richer.

"Let the planters of the South commence and pertinaciously adhere to this system, and in three years there will not be a single man from Tar river to the Rio Grande who will desire the aid of an Agricultural Convention to help him out of difficulties arising from the low price of a staple which from its frequent fluctuation in value renders it not only an uncertain income, affecting the interest of the planters alone, but one which brings in its train ruin to all who deal with the planters."

The advice is excellent, but why is it that it should now be needed? Why have not all these things been done long since? Why are they not now done? It is because they could not and cannot be done. In the natural course of things the consumer of food and cotton seeks to place himself where the food and the cotton together grow; but every attempt that has thus far been made to bring about this union has been attended with failure, because of the perpetual changes resulting from the English system of policy. Canada has no factories, and she can have none. Nova Scotia has no furnaces, and she can have none, although coal and iron both abound. The manufacturers of Ireland have been ruined. Those of India have also been ruined, and each successive province added to that great empire has been exhausted; and thus has it been rendered necessary to add province to province, and kingdom to kingdom, to keep up the revenue. The whole policy of England tends to produce the state of things now existing at the South, and the protective system is but a necessary measure of resistance to it on the part of the planters and farmers of the world. Were there no nation in the world but the people of the United States, they would constitute a community perfect in itself, capable of supplying all their own wants, and they would be better supplied, and at far less cost of labor than at present. The wealth now wasted on ships and wagons employed in dragging about the world the food and the cotton that are yielded in return to labor that would be better employed in the work of converting both into cloth and food, and ore into iron, would then take the form of furnaces and mills, and the power of consuming food and cloth, and iron, would be doubled, because the labor required for their production would be reduced by more than one-half.

LEAVES—THEIR VALUE.

WHAT shall I do with my LEAVES? Are they good for any thing? asks a correspondent. Do with them! good for any thing! Why treasure them to be sure, as if they were coin of the realm; they are good for every thing which a gardener has to do. They are the best of all shelter, the best of all materials for bottom-heat, the best of all soil, the best of all drainage, the best of all manure. It is true they contain little or no nitrogen, but they rot quickly, are full of saline matters, on which every thing that bears the name of plant will feed gluttonously, and from their peculiar structure allow air to pass in and water to pass out with perfect freedom.

If we wish to know what leaves are good for, we have only to burn them, and see what a quantity of ash they leave behind. All that ash is as much food for other plants as beef and mutton are for us. It is the material which Nature is perpetually restoring to the soil in order to compensate for the waste which is produced by the formation of timber. In wild land, trees are annually thus manured; were it otherwise, a wood would be a roof of life overshadowing a floor of death. If we can remove the leaves from our plantations, it is only because of the artificial richness of the soil in which they grow. This sufficiently indicates the value of leaves, which are in truth hardly less important in their death than they were in their life, though in a different way.

ON THE USE OF SWAMP MUCK AS A MANURE.

ALL that is said, that has a local bearing, in the Vermont State Agriculturist, from which the following remarks are taken, applies with equal truth to many other States—especially, as we know, to the Western Shore of Maryland, and to other Southern States. On the Eastern Shore, the farmers do begin to understand the value and use of a material which nature has kindly provided, as she has done many others, if man would only take the hint; but blind are the eyes of ignorance, and laziness is not the companion that will open them. The spirit of inquiry and research must be implanted in youthful minds, or it rarely takes firm root, and parents who have been reared in ignorance of books and journals that would instruct them in a better knowledge of their profession, don't like to have their children more wise than themselves. Hence you so rarely see the farmer, averse to reading himself, put an agricultural book or journal in the way of his son, and hence we have in vain offered them the most profound works in six volumes, for \$12, the *half* of which, with many hundred engravings, cost more than \$30: we allude to the Farmer's Library and Monthly Journal of Agriculture, *bound*, the subscription price of which, in sheets, was \$15.

Probably no district is better supplied with swamp muck, in a condition and in situations suitable for the purposes of husbandry, than Vermont. But, strange to say! the vast deposits of this cheap and effective fertilizer, though found on almost every farm, are very seldom drawn upon. Our farmers do not seem to be aware of its valuable properties, or they consider it too much trouble to drain their marshy grounds merely for the purpose of procuring it. Experiments have also been made with it which have very much disappointed the expectations formed, since many who have tried it, regarding all soil as fruitful in proportion to its *blackness*, have imagined that muck, which is as black as coal, must be the very quintessence of nutriment. But this criterion is by no means a reliable one. It is indeed true that *muck* or *humus*, or *vegetable mould*, or *geine*—they are all the same—is a fertilizer, but as it is in great measure insoluble, in the absence of other substances with which it combines, its action is at best but feeble. Let us, however, inquire out the elements which it is capable of supplying to the vegetable organism, the conditions under which those elements are adapted to the wants of the plant, and the means necessary in order to this preparation.

The general term *muck* or *humus* is applied to the black or dark-brown substance left as the result of the decay of vegetable matters. It consists of those elements of plants which are drawn from the soil, including the salts and mineral matters which constitute the ashes of the plant, together with a large part of the carbon which entered into the composition of its vegetable fibre. This vegetable fibre is the chief constituent of all plants, and the decay of the latter involves that of the former. It consists chemically of carbon, hydrogen, and oxygen in these proportions:

52.5 carbon,
42.3 oxygen,
5.2 hydrogen.

100 parts *by weight*.

When burned in the open air, or in oxygen, its hydrogen and carbon combine with its oxygen, and form water and carbonic acid, which escape as gases, and nothing of the vegetable fibre remains. The hydrogen always burns first. When there is not sufficient oxygen to burn the whole, as in the case of charcoal-making, the hydrogen burns and the surplus carbon remains in the form of coal. This coal contains, besides carbon, a small portion of various salts, which constitute the ashes of ordinary combustion. (These are not constituents of vegetable fibre, which is universally the same

substance, but vary in different plants.) Now, impossible as it may seem to the common apprehension, the processes of burning and decomposition are actually the same, the only difference being that in the one a few moments accomplish the result, the flame and intense heat which accompany it being the consequence of the condensation of a process which requires perhaps years in the slower progress of the other. The same amount of heat is actually developed in the one case as in the other, though given off by slow degrees, and through so long a time that it is not perceived at any one moment; the products are in both cases the same; and the residuum the same. To be sure the *mechanical textures* of the two substances, muck and charcoal, are dissimilar; but when *chemically* examined they present the same *general* characteristics. The muck, however, which is found in our swamps will not be found *exactly* similar in constitution to hard wood or pine coal, because, though vegetable fibre whose decomposition furnishes the carbon of both be universally the same, the amount of *ashes* or alkalies and earths which result from the decomposition varies with the plants which furnish the material. Thus oak, maple, and all other hard woods, contain more potash and lime than pine and hemlock; whence hard wood ashes only can be used for soap-making. The leaves of hard wood trees make a better compost than those of pine, partly for a similar reason. The rushes, and other marshy plants which furnish the material for the greater portion of our swamp muck, contain much less of these alkalies and earths than upland plants, and the muck made from the former is, therefore, not so rich as that produced from the latter. Nevertheless swamp muck contains a considerable proportion of them, and since these mineral elements are the only ones furnished directly by the soil to the growing plant, and as the crops taken off the land must be used for other purposes than manure, a clear profit is gained by applying swamp muck—equal in value to the amount of ashes it contains.

But its mineral elements are not the only contributions to fertility furnished by this substance. The carbon of plants is not derived directly from the soil, but is separated by the leaves and roots from the carbonic acid gas, which is continually supplied to the atmosphere by combustion and decay. All substances containing carbon give off, during the process of putrefaction, more or less carbonic acid, which is formed from the combination of the carbon with the oxygen of the air. This gas is a constant element of the atmosphere, but is continually changing; being produced on the one hand by fires, decomposition, and animal respiration, and consumed on the other by the leaves of plants, which decompose it and return to the atmosphere the oxygen it contained. Thus a most beautiful system is maintained: the vegetable world supplies the animal, not only with food, but also with the vital principle of the air it breathes: while the animal furnishes the plant both with the necessary elements of growth, and with the gaseous compound from which its fibre is formed. Now the union which takes place between the carbon of muck and atmospheric oxygen is a slow one, occupying years before the carbon is all consumed. Hence for a long period muck will furnish plants, on the very spot where they need it, with a chief element in their structure.

Again: pure humus is very sparingly soluble in water at ordinary temperatures; but when mixed with strong alkalies, as quick-lime and potash, or quick ashes, it becomes converted into humic acid. This with an excess of lime, or with the other alkaline bases in the soil, forms a class of salts denominated *humates*, which are freely soluble in water, and are thus fitted for absorption by the roots of plants.

We see then that pure muck applied to soils is comparatively inert, being

useful only on account of the small proportion of mineral substances it contains—that its effects in furnishing a supply of carbonic acid are lasting—and that when composted with lime it is rendered useful by combination with other matters in the soil. So much for its *chemical* character.

Its mechanical properties add much to its value as a manure. It is exceedingly light and porous, so that when applied to clay soils their texture is thereby loosened, and rendered more permeable to the roots of plants, while yet its affinity for water is so powerful that on sandy lands it prevents the effects of drouth. It will imbibe three-fourths of its weight of water without becoming wet, so that in light soils its tendency is to retain moisture, and in heavy ones to permit the excess of it to escape downwards by loosening their texture. Furthermore, its absorbent powers are of infinite service in the barn-yard, where it is the very best material for mixing with animal manures. Composted with these it prevents excessive heat, takes up the juices and gases which would otherwise escape, and is itself in a measure decomposed by the action of the substances they contain. Two parts of muck carefully mixed with one part of stable manure are said by those who have tried the experiment, to be equal in value to three parts of pure stable manure.

From this hasty review of the origin and nature of muck we draw the following practical maxims:—

Muck in a pure state is beneficial to old lands.

Its good effects are very much augmented by composting with lime and unleached ashes.

It is invaluable as an absorbent of the juices of animal manure.

Its effects are lasting.

If you have any muck beds on your farm, have a few hundred loads of it dug and thrown in heaps during summer or fall, when the water is low. It will have a few months to drain before you will want to draw it. If the ground is sufficiently firm to bear a team, haul out enough of it to cover your yards and hog-pens a foot deep before you put up your cattle, and during winter keep the surface of your manure heaps covered with it. Or if you do not keep much stock, and lime is cheap in your neighbourhood, compost it in fall with quick lime, at the rate of one barrel of lime to a cord of muck, and let it remain until the following spring. Ashes may be substituted for the lime in the proportion of $1\frac{1}{2}$ to 1. We speak from experience when we say that you will find this compost, especially on light lands, and for fruit trees and vines of all descriptions, superior to any stable manure of whatever kind. Its effects are not so sudden as with some other specifics, but they are certain and durable.

We hope that the immense deposits of this article, so frequently found in our swamps and intervalles, will soon be taxed for the benefit of the farmer. Time has been, perhaps it has not yet passed away, when Vermont farmers thought hardly of Providence for placing them in a land of rocks and mountains, and sandy pine plains, while they neglected the materials given them to work with, and refused to employ those agents which nature has placed at their disposal. Time was, when bad crops were attributed not to natural causes, for of these nothing was known, but to the direct interference of supernatural power. But men are beginning to reason on the subject of their business. These superstitions are passing away, and we trust soon to see the day when the light of science shall illumine every object in the path of the husbandman, as clearly as it now does the caverns of the miner, or the laboratory of the physician.

To gardeners and fruit growers in Burlington we can furnish an excellent article of muck, which will be delivered to order, during the winter.

THE PREMIUM HONEY AT BALTIMORE.

THOUGHTS ON WAR, AS IT CONCERNS THE FARMER AND PLANTER.

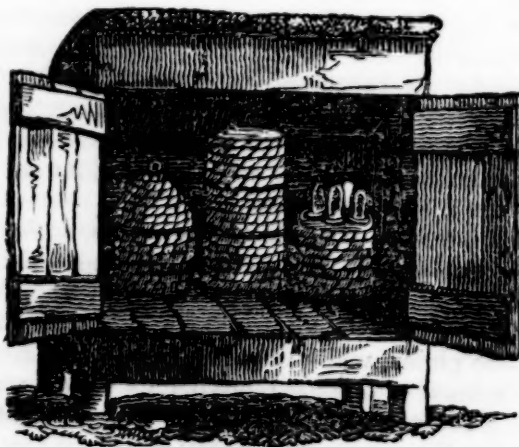
THERE were some beautiful specimens of honey, and of improvement in the structure of bee-hives, at the great State Fair at Baltimore, in November, presented by Mr. Whitman and others. We are not informed who took the premium, but this we know, that one of the exhibitors, friend STABLER, of Montgomery county, has had the kindness to send us some of his, all the way to the City of Brotherly Love: an act of obliging remembrance from an old friend, the more willingly registered, as our contemporaries of the press run very much ahead of us, in their occasions to acknowledge things of this sort. By-the-by, as these "Christmas boxes" and "New-Year's gifts" often come, like Almanacs, a long time before their time, is there any reason why an equal license may not be taken after the day has passed? In that case we would venture to whisper that it may not yet be too late to send us a New-Year's gift in the shape of a *club*—of subscribers.

As to the honey, it was eaten with the addition of far-famed Philadelphia butter, not only for its own sweet sake, but in pursuance of the injunction, "Butter and honey shall ye eat, that ye may know to choose the good and refuse the evil."

Every one has heard the anecdote of the snuff-maker, who grew rich in the practice of his trade, and as usual, "set up his coach," but had in him too much honesty and truth to repudiate his calling, as some do who rise from meaner employments to live in palaces, and set themselves up for "exclusives!" When the builder asked the honest snuff-maker for his coat-of-arms, to be painted on the panel of his coach, he told him to give a man with finger and thumb regaling his olfactories with a pinch of Maccabaw, and under it to write:

"Who'd have thought it,
Nose has bought it!"

Now for the hieroglyphic sign of that trait which distinguishes the Stabler family, we would recommend.



"Brethren, give *diligence* to make your calling sure."

We are sometimes tempted to wish that all the world would turn Quakers, so that industry, and usefulness to our fellow-man, might be substituted throughout the world, for frivolity and war, of which we always think with horror, as a scandal to civilization and Christianity—and especially where people boast of being their *own rulers*.

"I hate that drum's discordant sound,
Parading round, and round, and round:
To thoughtless youth it pleasure yields,
And lures from cities and from fields,
To sell their liberty for charms
Of tawdry lace, and glittering arms;
And when Ambition's voice commands,
To march, and fight, and fall in foreign lands.

"I hate that drum's discordant sound,
Parading round, and round, and round:
To me it talks of ravaged plains,
And burning towns, and ruin'd swains,
And mangled limbs, and dying groans,
And widow's tears, and orphan's moans;
And all that misery's hand bestows,
To fill the catalogue of human woes."

To us belongs the peculiar disgrace of a *Republican* government taxing the peaceful Farmer and Planter to the amount of twelve or fifteen millions of dollars *annually*, to keep up warlike establishments and schools, because, forsooth, some day or other, we *may* have war—for if not otherwise, we can easily provoke it—and would it not be a pity, after having made the people pay some 2 or \$300,000,000, not to have war every twenty years? Cannot any one see that, otherwise, this enormous amount, sweated out of the substance of the farmer, would be absolutely thrown away? If we would have an excuse for this enormous expenditure, every year, so as to cajole the people into paying it, we must have war now and then!—but then let any man of common sense, who can add two and two together, ask himself whether, even as a means of self-defence against possible (for it is barely possible) invasion from abroad, it would not give us more physical strength and power of making ourselves respected, if, instead of throwing away these \$15,000,000 every year, we were to expend the same amount in improving, by appropriate instruction, the rising generation in agriculture and peaceful arts; thereby increasing, beyond calculation, their *productive capacities*; and also, in developing the internal resources of the country, by opening and expediting all the channels of exchange between the producer and the consumer? 4 or 500,000,000 dollars is the least that has been expended, in time of peace, on the army and navy, since the war with England. Now let any farmer, at his fireside, take his pencil and calculate how many thousand miles of railroads and canals such a sum would have built, and how many teachers might it have prepared in State Normal Schools, to instruct in common schools the sons of farmers in agricultural chemistry and geology, in vegetable and animal physiology, in the principles of mechanical philosophy as involved in the structure of all agricultural machinery, the principles of civil engineering, &c. The cost of publishing one military reconnoissance or nautical exploration, would place, for instance, "*The Elements of Agriculture*," a 25 cent book just published by Carey & Hart, in the hands of half a million of boys, and thus sow the seeds of knowledge that would *prevent* war, and in place of it, yield a rich harvest of national honor—the honor of being the best informed, and, as a consequence, the most peace-loving and just of all nations! Have landholders, for whom we are laboring, no interest in questions of this sort? If they have not, who have?

Let us hope that we may regard the resolutions presented by Mr. EARLE and passed at the Maryland State Society, combined with many other corroborative symptoms, as ominous of a change of public sentiment—and of a change obedient thereto in the action of Government—on these subjects; conducive alike to the honor of the country, and to public liberty. Be it our duty to use our humble means to accelerate such a change; and oh that in this we could have the *press-gang* to assist us!

THE CORN TRADE OF EUROPE.

[From the London Mercantile Gazette, Dec. 1.]

"THE grain trade is completely paralysed by the continued arrivals of enormously large supplies of foreign grain, flour, and pulse, and prices decline week after week, in the British markets, not from an abundance of home grown produce, but from the constant influx of foreign grain. By the official account recently published of the imports into Great Britain it appears that, during the month ending 5th of November, 392,939 qrs. of wheat, and 228,952 cwt. of foreign manufactured flour, were imported, and that duty was, within the same period, paid on 506,720 qrs. wheat and 251,182 cwt. flour. Taking all kinds of grain and pulse together, the immense quantity of 796,168 qrs. were received, and duty was paid on 908,090 qrs., exclusive of the flour above mentioned. Can any surprise, therefore, be felt at the present depressed state of the trade? There is certainly no immediate want for these large supplies, and general opinion being opposed to a rise, no one is inclined to buy more than necessary for present use. Stocks in granary are consequently accumulating; more is pressed on the different markets than the consumptive demand can take off, and the English grower is everywhere undersold. Hitherto the bulk of the foreign supply has been from the Baltic, and from France; now, however, receipts are beginning to come to hand from America, and in a short time we may expect arrivals from ports lying east of Gibraltar. As a sample of what America is likely to do, we have only to call attention to the imports into Liverpool during the week ending November 27, consisting of 124,000 barrels of flour, 19,000 quarters of wheat, and upwards of 50,000 barrels of Indian corn. Business has, as may easily be conceived, been quite prostrated, and the prices of wheat, previously much depressed, have further receded 2s. per quarter at all the leading markets in the kingdom."

As the present policy of our rulers tends to compel our farmers to "compete in the great grain markets of the world" with the poorest people of the world—with those who have made no market on the land for the products of the land, and are therefore in the full enjoyment of that *freedom* of trade which *compels* them to make abroad those exchanges which they would prefer to make at home, and to waste on the road and in foreign markets the manure that would render their labors doubly productive—we deem it not amiss to present to their view, occasionally, the state of those markets, that they may appreciate at their full value the advantages to be derived from further dependence upon them. We are now importing many millions of dollars of food in the form of iron, and coal, and the labor expended in the work of twisting and weaving our cotton, while "the great grain markets" are being choked by the products of the serf of Russia, and the impoverished people of Sicily, and Egypt, and Poland, and to such an extent as to render it totally impossible that we should compete for those markets except at prices that must be ruinous to the farmer, whose land is thus deprived of value while he himself is rendered unable to purchase the *apparently* cheap, but *really* dear products of foreign looms and furnaces. We cannot obtain the foreign market, and we close the domestic one, thereby driving the miner and the furnace-man, and the worker in cotton or wool, to seek the West, there to become producers of food—thus burning the candle at both ends. Such has been the course of Virginia and South Carolina, and what has been the result? Whenever they shall determine to make their exchanges at home, they will thereby place themselves in a position to become two of the most prosperous States in the Union, but not until then. The experience of all countries and all ages goes to show that the plough never has prospered and never can prosper at a distance from the loom and the anvil.

Can it be that any American farmer or planter can read the above, from a London paper, with indifference, or without seeing how directly such items bear upon his pursuits and his condition? Yet so we fear it is, and it is to awaken his sensibilities and to lead him *to think* that we have established this journal. We would have the cultivators of the soil reflect, that unless the policy of the government is such as to multiply *consumers* of their pro-

duce, and to insure them fair remuneration to their labor, it were useless for him to study the means of keeping up and augmenting the fertility of his land—nor will he do it long while the world is glutted with his surplus products. It is only in remunerating markets, to be found near the land, that teachers are to be found to instruct in the ways of its improvement—science never comes, nor will industry dwell long, where there is no certainty of reward. These are questions which we would exhort our friends of all parties to study for themselves. Make a good market, and farmers will soon become skilful.

Until that is done, we in vain publish accounts of 100 bushels of corn and 50 bushels of wheat to the acre. If we would compel the manufacturer to take his place by the side of the agriculturist, such crops would become too common to be thought extraordinary.

BUTTER MAKING.

Messrs. Editors of the Plough, the Loom, and the Anvil :

HAVING noticed an article in the last number of your paper, relative to "butter making," in which it is recommended to apply "hot water or steam" to the milk or cream, to prevent the butter from tasting of the turnips fed to the cows, and deeming the remedy rather an impracticable one, and having discovered a plan which is equally effectual and much more economical and convenient, I will submit it to you, and if you deem it worthy of a place in your columns, you are privileged to insert it. My plan is to take the whole turnips, or any other roots which we desire to feed to the cows, and place them in the midst of the cut straw or corn stalks in the steam-box, and steam them until they are soft. During the steaming process, the unpleasant smell of the turnips will escape from the box, it being not perfectly tight, and at the same time they will impart a palatable flavor to the straw or stalks, which will cause the cows to devour the whole with great eagerness.

Since we commenced steaming the turnips with the stalks, the cows have increased greatly in the quantity and quality of the milk over that given when the turnips were fed raw and the stalks dry; and we are now selling the butter for the highest market price. The cows fill themselves on this feed as they would on grass, and give a fair quantity of milk. We steam only twice a week, the box being large enough to hold a sufficient quantity to supply 12 cows with all they will eat for 3 days. We use coal for fuel with which to get up the steam, and it requires but about 150 lbs. per week, or 75 lbs. for one steaming.

When we have not turnips or other roots to steam with the straw or stalks, we mix a small quantity of hay and bran with them, by which the mass is rendered palatable.

The amount of provender saved by this process is astonishing, and the cattle do equally as well as when fed with good hay.

JOHN WILKINSON.

Mount Airy Agricultural Institute, Germantown, Dec. 12, 1848.

Gooseberries and Currants.—The following are six good varieties of Gooseberries, flavor being the principal consideration: Red Champagne, Woodward's Whitesmith, Pitnaston Greengage, Keen's Seedling Warrington, Yellow Champagne, and Red Turkey. With regard to Currants, you may be very well satisfied with the Red Dutch and White Dutch. Half your plantation of Red Currants may, however, consist of Red Dutch, and the other half of Knight's Large Red. We are not aware of any White Currant superior to the White Dutch.—*English Paper.*

DEPRESSION OF MANUFACTURES.

"There are at the present time, says the Pawtucket (R. I.) Gazette, more spindles stopped, and more operatives out of employment, in our town, than we have known at any time since 1829. Our manufacturers have been disposed to keep their wheels moving as long as they could without heavy losses to themselves. As to profit, one of our citizens said to us a few days since: 'The only account I have been able to keep without any degree of certainty, for some time past, is on the loss side of the book.' The mills which have been stopped, are, in most cases, owned by men perfectly solvent, and who are now able to discharge any liabilities resting upon them, but who were, perhaps, doubtful as to their continuing able, if they continued to manufacture goods and sell them at ruinous prices, or lock them up in a storehouse. What the final result of this stagnation will be we are not able to predict.

"When we take into consideration that the British factories have been almost on half time during the past year, and a number of our own factories not working full time, we may conclude that there are at present enough of factories to make enough of clothing in one year, to supply the world for two, for at present the markets are still glutted."—*Scientific American*.

The tariff of 1846 was to make cloths so cheap that consumption would be greatly increased. They are cheap, but labor is *cheaper*, and the market is glutted because of the inability of the laborer to buy. The workmen of Pawtucket—and the workwomen of Pawtucket—and the workmen and workwomen of hundreds of mills—and the workmen in the coal mines—and in the furnaces and rolling-mills—are earning low wages, even when employed, and many are absolutely idle—and the consequence is that there is *a glut of every thing, labor included*. Were the tariff of 1842 to be re-enacted, the glut of labor would cease, because there would be a demand for workmen and workwomen, who would then earn wages to enable them to be consumers to the farmer, and they would enable the manufacturer to buy wool and cotton to the further benefit of the farmer. *The farmer and the planter are the real sufferers by the present system*, and they it is that are to benefit by a change. They should never forget that every man who is driven from the loom and the anvil is forced to take to the plough—and every one becomes, necessarily, a rival, when he would gladly be a customer.

THE CLIMATE BEST SUITED TO THE COTTON PLANT.

DIFFERENT KINDS OF COTTON—INSTANCE OF YANKEE ENTERPRISE.

THE following article is copied more particularly for the sake of preserving the tables of the mean temperatures of places in Texas, Louisiana, Mississippi, and Alabama.

Speaking of the climate of Georgia and South Carolina, the writer merely remarks: "The hilly parts, 200 miles from the sea, are agreeable and favorable to health." He might have gone further, and have safely characterized the climate of the mountains of Georgia, the Carolinas, Tennessee, Kentucky, and Virginia, as unsurpassed in the world, even in the most delightful parts of Italy. Such was the opinion, as expressed on personal observation, by the *Abbe Correa De Serra*, (a travelled man of vast research,) who declared that the world could not supply a region of country more favorable to longevity.

One of the most remarkable instances of Yankee enterprise which has fallen under our observation, is the undertaking of a Down Easter, living, we believe, in Charleston, S. C., to establish a *cheese dairy* in these mountains.

On the watch for a traveller's early breakfast at that capital hotel, the United States, Philadelphia, we chanced to file in next to the proprietor of this mountain dairy, who told us he had purchased in these mountains a farm of *twenty acres*! This was his fulcrum, or resting point, from which his one hundred head of cattle went abroad daily to luxuriate over mountain and valley, the young cattle demanding no feeding whatever throughout the year. He had *sixty cows at the pail*, and is probably the only cheese-maker in all these "diggings." What a glorious climate, and what a broad and propitious field for the exercise of Yankee industry! If it lay north of the Hudson, and if there were any thing like permanence in the policy of the government, how it would teem with fac-

tories, and dairies, and tanneries, and with hundreds of thousands of active human beings!!

In inquiring more particularly into the climate best suited to the **AMERICAN COTTON PLANT**, not only in its native country, but in the countries where its culture is most successfully conducted, we must remember what both Baron Humboldt and Professor Dove have pointed out, that while Europe has a true insular or sea climate both in winter and summer, North America inclines to a continental climate in winter and to a sea climate in summer; that is, has a cold winter with a cool summer. But northern and central Asia have a true continental climate both in winter and summer, or a cold winter and a hot summer. Notwithstanding this, we must also recollect, that though each locality may participate in the characteristic climate of its continent, yet that all places near the coast will have more or less of an insular climate, while those in the interior, such as are of a continental nature, though in varying degrees.

The different kinds of cotton cultivated in the United States of America appear, in the present day, and as far as we have been able to procure satisfactory information, to be varieties of one species; that is, that the Georgian is the Sea Island carried into the interior; the Sea Island itself was originally introduced from Anguilla, one of the West India islands. The New Orleans does not differ specifically from the Sea Island cotton, and is admitted by the planters of the Southern States of America to be identical with the plant of Mexico, from whence indeed they import their finest seeds. It is probable that it was from the neighboring coast of Mexico that the indigenous cotton of that country was introduced into the West Indies, and from thence it was taken to the Island of Bourbon. Hence we may account for *Gossypium Barbadosense* being identical in species with both the New Orleans and Sea Island cottons as well as with Bourbon cotton, as is evident from the colored representations given of these three varieties by Dr. Wight.

The Mexican plant is not a native of the temperate regions of that country, but of the Tierras Calientes, or hot districts. It is produced, for instance, in the neighborhood of Vera Cruz, and is described as growing spontaneously near Valladolid, a town situated on the great plain of the peninsula of Yucatan, described by Humboldt as one of the warmest regions in equatorial America. Mr. Stephens states that the spontaneous growth of cotton around that town had led to the erection of a cotton factory in the place. Mr. Norman, in his "Rambles in Yucatan," says: "The cotton plantations, or rather the districts where the material is raised that is consumed in the manufactory in this city, are to the north, and known as the Tizemen district. The same spot is seldom cultivated for two successive seasons. After the crop is gathered, the ground is suffered to be overrun with weeds and brushwood; which, when years have elapsed, are cut down and burned, and the field is replanted." This rude method of culture is adduced only to show how little attention is paid to the plant in its native country. But as it is desirable to know something precise respecting the climate of one at least of its native districts, we take from Professor Dove the following notice of the means of observations made at Vera Cruz for thirteen years. This town, situated on the coast in N. lat. 19°12', and W. long. 96°9', has a mean temperature of 77°·02, with a difference of only 12°·42 between the hottest and coldest months: thus—

Jan. 69·98	Feb. 71·60	March. 73·40	April. 77·18	May. 80·42	June. 81·86
July. 81·50	Aug. 82·40	Sept. 80·96	Oct. 78·44	Nov. 75·38	Dec. 71·06

The Mexican cotton has been introduced into Texas, as well as into Louisiana and Alabama. In the Southern parts of Texas, where the climate is described as being very congenial, "the plant does not require to be renewed more frequently than once in three or four years to yield a crop superior in quality and quantity to the annual planting of Louisiana." Mr. Kennedy informs us, in his work on Texas, that cotton planting commences there in February, and picking begins at an earlier, and continues for a longer period than in the United States; also that the average return on the acre is considerably greater in Texas than in the States, and the expense of cultivation considerably less, in consequence not only of the greater richness of the soil, but also of the superior mildness of the climate. The cotton is, moreover, of a superior quality, and that "planters of acknowledged veracity stated that it is not uncommon to pick 4000 lbs. of seed cotton from an acre of ground." But in connection with this statement we must not forget that Mr. Spalding, himself an American cotton planter, says, "The besetting sin of agricultural statements is their exaggeration."

Mr. Featherstonhaugh, after crossing into northern Texas, in about lat. $33^{\circ} 40'$, from the United States, observes that he had never seen the cotton plant growing in greater perfection before; for in the cotton districts he had passed through, the plant was a low, dwarfed bush, not exceeding two feet in height, but here the bushes were five feet high, often bearing 300 bolls, and yielding from 1500 to 2500 lbs. of seed cotton to the acre. This gives from 25 to 30 per cent. in weight of raw marketable cotton. He states that it is considered a fair crop if one bale of 450 lbs. to the acre of such cotton is produced. The most successful cultivation of cotton in the United States is in Louisiana, Mississippi, and Alabama. In the southern parts of these States—as, for instance, in the latitudes of New Orleans and of Mobile, there is little frost, and the winter is considered mild, with considerable heat in summer; but this is tempered to a great extent by the pleasant and salutary effects of the sea breeze, which sets in from the Gulf of Mexico for a great part of the day. There are heavy dews at night, and frequent showers occur both in spring and during the summer. In the interior and more northern parts of these States, (which are in some parts elevated from 500 to 1000 feet above the level of the sea,) frost is expected in October, and continues till near April; sometimes occurs even in May, so as to injure, though it does not then destroy, the cotton plant. The heat of summer is considerable, but still tempered by the influence of the Gulf of Mexico, and of the numerous great rivers, as well as by dews and occasional showers of rain. The cultivation of cotton is commenced about the beginning of April, when the land is still saturated with the winter rains, and difficulty is sometimes experienced in getting the land sufficiently dry. Otherwise a good shower of rain is essential when cotton is first sown, and it is desirable also to have occasional showers during the planting, ploughing, and hoeing seasons. The bolls of cotton begin to open about the middle of July, and continue doing so until the frosts come on in the middle or end of October. The yield is about 400 lbs. of clean cotton to the acre.

In order to have a precise idea of the climate of the most favorable cotton districts, and for the advantage of comparing them with that of other countries into which it may be wished to introduce the American cotton, we select, from Professor Dove's Tables, as published by the British Association, the following mean temperatures of places in Texas, Louisiana, Mississippi, and Alabama, as indicated by their initial letters.

	Lat. N.	Long. W.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean of Year.
1. Galveston, T.	29° 18'	95° 1'	60·3	62·5	75·0	73·2	83·5	86·5	88·2	88·5	87·1	64·2	60·1	59·4	74·03
2. New Orleans, L.	29·58	90·7	56·75	58·39	66·58	72·41	77·26	81·78	82·22	82·12	79·42	69·71	58·71	52·26	69·80
3. Mobile, A.	30·12	87·59	56·40	57·37	65·64	70·00	76·36	82·17	82·41	82·73	78·94	69·97	61·50	55·50	69·92
4. Baton Rouge, L.	30·26	91·18	52·37	51·86	61·55	68·99	76·58	82·9	80·1	82·04	76·58	66·84	62·47	55·89	68·18
5. Jackson, L.	30·51	91·1	47·6	49·4	56·6	65·4	70·8	78·7	81·7	79·9	75·1	67·4	50·	48·4	64·25
6. Houston, T.	31·54	95·56	65·2	60·5	68·7	72·7	85·5	80·1	84·2	81·4	83·5	72·3	62·3	60·0	73·03
7. Natchez, M.	31·34	91·25	50·13	50·89	62·2	69·93	72·72	80·62	81·78	80·13	74·99	64·58	55·23	49·09	66·10
8. Vicksburg, M.	32·24	91·6	51·40	53·72	63·99	74·01	76·84	80·65	82·48	80·11	76·40	64·92	55·26	50·91	67·56

To compare with these, we shall further adduce, from the same Tables, the mean temperature of places on the Atlantic coast, as in Florida, Georgia, and Carolina, as well as in the interior of the two last.

	Lat. N.	Long. W.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
9. St. Augustine, F.	29° 50'	81° 27'	60·73	64·97	67·55	70·06	76·89	81·41	82·81	82·67	80·16	73·83	63·55	60·92	72·13
10. Savannah, G.	32·5	81·10	52·15	53·74	61·19	67·36	73·14	77·89	82·23	82·09	75·96	66·92	57·20	50·50	66·70
11. Charleston, C.	32·47	79·57	49·61	52·80	58·34	63·20	75·19	78·85	80·70	80·15	74·3	66·7	58·6	51·8	65·91
12. Fort Johnston, C.	34·0	78·5	51·42	52·19	60·52	65·28	73·70	78·98	81·57	80·39	76·32	69·11	60·13	53·83	66·96
13. Columbia, C.	34·0	80·58	37·7	42·9	47·3	62·2	67·3	72·4	76·1	76·5	66·3	53·2	43·7	39·5	57·09
14. Augusta, G.	33·28	81·54	45·69	47·63	53·66	62·34	69·38	77·72	79·47	75·95	72·96	60·35	54·23	43·45	61·90

The climate of Georgia is somewhat warmer than that of Carolina, but the low flat country of both is moist and unhealthy. The spring is commonly rainy, the heat of summer is considerable, but relieved by the gentle winds which blow almost daily from the sea. The winds change from S.E. to S.W. about the end of July, but variable, from storms of thunder and lightning, and the heavy rains of July and August. The cold weather seldom commences until about the beginning of December, and terminates in March; but the winter is usually mild, and snow seldom falls near the sea, and soon melts away. The hilly parts, 200 miles from the sea, are agreeable and favorable to health. The winter is colder; snow falls to the depth of five or six inches. Though the above Tables are sufficient to give a general idea of the climates, it would be desirable for agricultural purposes to have also the maxima and minima; for a night of frost may destroy plants, as great heat with drought will be equally injurious from drying them up. Cotton is sown in April, picking commences in July or August, and continues till November, and, on the coast, sometimes even to December. The returns per acre are about 125 lbs. or 130 lbs. of Sea Island cotton to the English acre. Of the short staple cotton, Mr. Spalding states that in the hill country, from the Mississippi to the Carolinas, not more than 500 lbs. of seed cotton, or 150 lbs. of clear cotton, can be obtained to the English acre.—(*Ure*, i. p. 115.) The short staple cotton is cultivated all the way from the southern borders of Virginia to the south-western streams of the Mississippi. The mean quantity over all is given by Mr. Spalding at 125 lbs. of both Sea Island cotton wool and of the short stapled wool to an English acre, but the amount of labor is much greater for the former than for the latter.—(*Ure*, Cotton Manufacture, i. p. 116.)

In comparing the climate of the above cotton regions with that of other countries, it is necessary to remember the peculiarity of American climate, with which this article was commenced, and also how much the best cotton districts are influenced by the Gulf of Mexico or the Atlantic ocean. The climate to the west of the Alleghany mountains is considered more mild than that under the same parallels in the Atlantic States, and by some even to the extent of 3° of latitude. This has been explained by the warm air of the Gulf of Mexico being driven up the basin of the Mississippi as well as that of the Ohio. The configuration of the valley being north and south no doubt favors the course of the southern winds, while the valleys of the Atlantic States being transverse, oppose any such transmission, or the migration of plants. The majority of the places of which the mean temperatures have been adduced being on the sea-coast, necessarily participate to some extent in the peculiarities of insular climate, that is, of seasons moderately contrasted. But still the differences between the hottest and the coldest month of the year is much greater than at Vera Cruz, that is, than 12°; being at Mobile, Galveston, and New Orleans, 27°.23, 29°.10, and 29°.96, respectively. But in the interior, at Natchez and at Vicksburg, the differences are greater, being 32°.69 and 31°.57. On the Atlantic States the differences are nearly as great as those on the south coast, being 31°.73 at Savannah, and 31°.09 at Charleston, while in the interior the differences are much greater, being 36°.02 at Augusta, and 38°.80 at Columbia. The application of these facts we shall pursue in a subsequent article.

The Stomach.—I firmly believe that almost every malady of the human frame is connected with the stomach; and I must own I never see a fashionable physician mysteriously consulting the pulse of his patient, but I feel a desire to exclaim—Why not tell the poor gentleman at once, "Sir, you have eaten too much; you've drunk too much; and you have not taken exercise enough!" The human frame was not created imperfect. It is we ourselves who have made it so. There exists no donkey in creation so overloaded as our stomach.

ACTION.

As amongst the Egyptians, the lion was the hieroglyphic of strength, so was the horse of agility; and truly nothing displays it more elegantly than he does, when gamboling in a state of liberty. In the race-horse, action, as in eloquence, is the next thing to substance; and *virtus in actione*, should be the horse-breeder's motto. But the action of the race-horse is of a nature peculiar to his calling. He must not only possess great stride in his gallop, the result of just proportion in his limbs and moving levers, but also a quickness in repeating that stride, or he would lose in time what he gains in space. It is then when stride and quickness are united, that the fleet courser is produced; and in his race with Diamond, Hambletonian is asserted to have covered twenty-one feet at a stroke at the finish of it; and Eclipse is generally believed to have covered eighty-three and a half feet of ground in a second, when going at the top of his speed, which, by a calculation by Monsieur Saintbel, amounted to about twenty-five feet of ground covered at a stroke.

The action most approved of in a racer, as describing the greatest extent, with the least fatigue to the animal, is what is termed on the Turf "round action;" that is, when, on a side view being taken of a horse in his gallop, his fore-legs appear to form a wheel or circle. Different ground, however, requires different action; and a large, long striding horse may be beaten on a hilly, or turning course, by one of a smaller size, but with a shorter stride, which prevents the Newmarket courses being a certain criterion of a good runner at Epsom, which is very trying ground, by reason of its acclivity, for the first half mile. The state of the ground, likewise, whether wet or dry, soft or hard, tells so much in a race, as often to give it to a horse very little thought of at starting, as was the case with Tarrare, winner of the St. Leger, at Doncaster, in 1826. The celebrated Euphrates, the winner of so many gold cups, and who ran till he was in his teens, was nearly a stone below his usual form, after even a hard shower of rain. This variation of fleetness corroborates our assertion, that the virtue of what is termed blood is mechanical, or, what is the same thing, that the excellence of all horses is mechanical, and that the smallest deviation from a true formation of the acting parts operates so powerfully as to render them, under certain exertions, nearly valueless.

WIND.

It is true, "speed wins the race;" but to make it available to the race-horse, it must be accompanied by endurance, or "bottom." A great promoter of this is clear wind, or freedom of respiration, the want of which makes the war-horse rebel in the manège, the hunter run into his fences, the draught-horse fall, as if he were shot, and the racer either stop, or bolt out of the course. In fact, when the organs of respiration are fatigued, all animals are nearly powerless. The cause of good wind may be distinguishable to the eye, and arises chiefly from depth in the forequarters, which implies a capacious thorax or chest. However wide a horse may be in his foreparts, he will not be good-winded unless he is, at the same time, deep. But still wind in the race-horse depends on something more, on the nature of his constituent and component parts, which, if in proper proportion, impart to him strength and agility, giving him that easy action which will not readily fatigue these organs of respiration; and so enable him to run on, when others, less gifted by nature than himself, are forced to slacken pace. The good effect of clear wind in a race-horse is in fact two-fold; first, it gives

him signal advantage in a race; and, secondly, horses thus organized require less work to make them fit to start.

The following passage on this point is worthy of remark: "When the animal powerfully exerts himself, a more ample supply of pure blood is required to sustain the energies of life, and the action of the muscles forces the blood more rapidly through the veins; hence the quick and deep breathing of a horse at speed; hence the necessity of a capacious chest, in order to yield an adequate supply, and the connection of this capacity of the chest with the speed and the endurance of the horse; hence the wonderful relief which the mere loosening of the girths affords to a horse blown and distressed, enabling the chest to expand, and to contract to a greater extent, in order to yield more purified blood; and hence the relief afforded by even a short period of rest, during which this expenditure is not required, and the almost exhausted energies of these organs have time to recover. Hence, likewise, appears the necessity of an ample chest for the accumulation of much flesh and fat; for, if a considerable portion of the blood be employed in the growth of the animal, and it be thus rapidly changed, there must be provision for its rapid purification; and that can only be effected by the increased bulk of the lungs, and the corresponding largeness of the chest to contain them."*

Certain thorough-bred horses would deceive an inexperienced observer as to the real state of their organs of respiration, by an appearance of difficulty of breathing, which, in reality, they do not possess. The term for this apparent defect is, in one instance, hard breathing, or high-blowing, and in another "cracking the nostrils." Of the first description was the celebrated Eclipse, whose breathing in his gallop could be heard at a considerable distance; and of the latter (still more common) may be reckoned many of the best racers of past and present days. Indeed, a race-horse cracking his nostrils in his exercise, and snorting well afterwards, are considered indicative of good windedness. On the other hand, when a race-horse becomes a roarer, which is a common effect of a severe attack of the epizootie, called the Distemper, he is rarely able to struggle in a race, although there have been several instances of winners under such very unfavorable circumstances.†

TEMPER.

Temper is a property of much importance to the race-horse, subject as he is to its influence under more trying circumstances than most other descriptions of horses. In the first place, his fine and nearly hairless skin, softened and cleansed as it is by frequent copious perspiration, is so highly sensible to the friction of the wisp and brush, as to induce him to try to rid himself of this tormentor, by attacking the person who is dressing him, and thus becomes vicious in the stable. It will also be recollected that he is at this time, perhaps, in the very highest state of condition and good keep of which his nature is susceptible. On the race-course, again, he has often to encounter the (to him) unnatural sound of music, and many strange objects; perhaps two or three false starts before he gets into a race; and too often when doing his best in a race, very severe punishment both by whip and spur. It is in his race, however, and chiefly in the last struggle for it, that the temper of the race-horse is most put to the test; and, if really bad, he either runs out of the course, to the great danger of his rider, and to the

* *Library of Useful Knowledge, Farmers' Series*, "The Horse," p. 182.

† Mr. Hull's Quibler, an English horse, afforded an extraordinary instance of stoutness. He ran, in December, 1786, round the flat Newmarket course, in *fifty-seven minutes and ten seconds*: and this year, (1848,) Trustee, by the sire of Fashion, trotted at New York twenty miles within the hour. It takes blood to do such things.—*Ed. P. L. & A.*

inevitable loss of his owner and those who have betted on his winning, or he "shuts himself up," as the term is, and will not head his horses, although in his power to do so. It is evident, then, that breeders should not send mares to stallions of known bad temper, as nearly all those propensities are found to be hereditary; and we could name one or two of the best horses of the present day, who are generally rejected as stallions to breed racers from by reason of these propensities.

It would be absurd to draw a comparison between the English race-horse in training, and the horse of the Desert, "educated," as Mr. Gibbon eloquently says of him, "in the tents, among the children of the Arabs, with a tender familiarity, which trains him in the habits of gentleness and attachment." Nevertheless, we are inclined to believe that the tempers of many naturally quiet horses are made uncertain, and oftentimes decidedly vicious, by want of proper judgment, as well as of good temper, in those who have the management of them. Brutes, like men, demand a peculiar mode of treatment, when we require them to do their utmost for us; and it is certain that this principle holds good in regard to both, namely, *that, in general, kindness gains its point, cruelty provokes resistance, and a proper degree of severity produces obedience.* The panther, in the fable, knew who fed her with bread, and who pelted her with stones; and we may be assured, that so noble and high-spirited an animal as the horse feels with acuteness sensations of pleasure and pain.

We often hear it asserted that the British thorough-bred horse has degenerated within the last few years, and is no longer the stout and long-enduring animal that he was in the bygone century, particularly during the last twenty years of it. We are inclined to believe that there is some truth in this. *We do not think we have such good four-mile horses, as they are termed, as formerly, which we consider easily accounted for.* They are not wanted, very few four-mile races being now run, even at Newmarket, or in the country, and, therefore, a different kind of race-horse is sought for. It may, however, be true, that the inducement to train colts and fillies, at a very early period of their lives, for these short races, has had an injurious effect on their stamina, and, consequently, on the stock bred from them. Formerly a horse was wanted for a lifetime, now he is cut up in his youth to answer the purposes of perhaps but one day;—a system, we admit, quite at variance with the original object of horse-racing, which was intended to benefit the community, by being the means of producing, as well as displaying, the constitutional strength of the horse in its very highest perfection.* Another cause may have operated in rendering thorough-bred horses less powerful than they were, or less capable of enduring severe fatigue. During the period of high weights and long courses, horses and mares were kept on in training until after they had arrived at the age of maturity, neither did they begin to work so soon; whereas now, no sooner have they won, or run well for some of our great three-year old stakes, than they are put into the stud to produce racing-stock, which is perhaps to be used much in the same manner as they themselves have been used, or, we should have rather said, abused.

But, admitting this alleged falling off in the powers and performances of the British thorough-bred horse, it may be the result of causes unconnected with those already noticed. Although there may be no era of greater intellectual brightness than another in the history of any animal but man, yet, as is signified by Plato in the eighth book of his Republic, there have always

* May we hope this will meet the eye of certain correspondents of the New York "Spirit of the Times?"—Ed. P. L. & A.

been periods of fertility and sterility of men, animals, and plants; and that, in fertile periods, mankind, as well as animals, will not only be both more numerous, but superior in bodily endowments, to those of a barren period. This theory is supported by the relations of ancient historians, in the accounts they give of animals which nowhere exist at present, and in the properties they ascribe to some of those which now do exist.

But to return to the alleged alteration for the worse in the British race-horse. *We admit the fact, that he is not so good at high weight over the Beacon at Newmarket, or any other four-mile course, as his predecessors were*, whose descent was closer than his is to the blood of Herod and Eclipse, and the descendants of that cross, said to be the stoutest of any. Nevertheless he is, in his present form, more generally adapted to the purposes to which the horse is applied. He has a shorter, but more active, stroke in his gallop than his predecessors had, which is more available to him in the short races of the present time than the deep rate of the four-milers of old times; and as he is now required to start quickly, and to be on his legs, as the term is, in a few hundred yards, he is altogether a more lively active animal than formerly; and, as such, a useful animal for more ends than one. In former days, not one trained thorough-bred horse in fifty made a hunter. Indeed, few sportsmen had the courage to try the experiment of making him one. He went more upon his shoulders, as well as with a straighter knee, than the modern race-horse does, and required much greater exertion in the rider to pull him together in his gallop. All those sportsmen, however, who remember such horses as the late Earl Grosvenor's John Bull and Alexander, must admit, that, in form and substance, they were equal to carrying the heaviest weight across a country, and the last-mentioned horse was the sire of several very powerful, at the same time very brilliant hunters. But as it is action after all that carries weight, the thorough-bred horses of this day are not deficient in that respect, unless undersized; and there are more thorough-bred hunters at this period, and have been more for the last thirty years, than were ever known before. This improvement in action also qualifies the full-bred horse for the road, whereas formerly not one in a hundred was fit to ride off turf. Indeed daisy-cutters and thorough-bred horses were nearly synonymous terms; but at present a young lady on a bit of blood is an every-day sight; and a young gentleman on any thing else in the parks, or on his road to hounds, is become rather a rare one. This is a very saving clause to breeders of race-horses, as a market is now generally found for such as are undersized, or tried to be deficient in speed for racing; whereas in former days a bad race-horse was, like Rosinante, neither saleable nor pawnable.

SPEED.

All animals in a state of domestication exhibit powers far beyond those that are natural to them in their wild state, and writers on the horse have advanced to the utmost verge of possibility, in recording the maximum speed of the English race-horse. Most of the instances stated by them, such as Flying Childers having run a mile in a minute, are unsupported by authority, and therefore not worthy of regard.* That the horse, however, has ever been considered the swiftest beast of the forest, may be gathered from the frequent allusions to his fleetness by inspired as well as by heathen writers. Thus, the chariot-horses of Oenomaus, King of Elis, were said to be begotten by the winds, emblematical of their prodigious swiftness; and Homer represents the steeds of Achilles to be the produce of Zephyrus (the

* We have not seen it contradicted, that Firetail, in 1772, ran a mile in one minute and four seconds.—*Ed. P. L. & A.*

west wind, said to be the swiftest of any) and Podarge, whose name signifies speed. Nor is Virgil far behind the rest in his encomium on the fleetness of his colt, which he makes to challenge the very whirlwind itself. As it is speed, however, that wins the race, it is most essential to the race-horse provided it be accompanied by stoutness; and unless we wish to fly through the air like Pacolet on his wooden horse, we may be contented with the speed of the present English race-horse. Perhaps the following is a fair specimen; and as it is of a late date, the same uncertainty does not attach to it, that hangs over the unsupported traditions of our earlier racing days. In 1832, Theodore, the property of the Honorable Edward Petre, and winner of the Doncaster St. Leger Stakes, ran the distance, being one mile seven furlongs, or two miles, all but one-eighth part of a mile, in three minutes and twenty-three seconds, carrying eight stone six pounds. He was trained by the late Mr. Croft, who also trained the second and third horses in the same race.*

EXPENSES OF A BREEDING RACING-STUD.

Some persons must be breeders of race-horses, but whether to profit or loss, depends on various circumstances. Amongst them may be reckoned the following:—Judgment in selecting the parent stock or blood; conveniences for keeping the produce well and warm, and on land suitable to breeding; and plenty of money at command, to enable a breeder to purchase mares of the very best racing families, and to put them to the best of stallions. When this is the case, we think breeding (we mean quite distinct from risk in racing) would seldom fail to pay, if the foals were sold off at weaning time, or even at a year old. A few years back, eight of the Earl of Durham's *foals* realized £200 a-piece; and, still later, several of Mr. Nowell's (of Underley Hall, Westmoreland) yearlings fetched the enormous sum of £500. No doubt, in all studs great loss is sustained by a certain proportion of the young stock which promises to be small and not worth training; but here breeders are often deceived. For example, the late Lord Grosvenor sent Meteora, the best mare in England of her day, to Chester Fair, when two years old, to be sold for £16, because she was considered as too small; and he also suffered Violante, the best four-mile racer of her day, to be sold, *untried*, for £50, but fortunately purchased her again. The great prices, however, occasionally paid to breeders for some horses, (4000 guineas, for example, to the Earl of Jersey, for Mameluke, the like sum for Priam, and 3000 guineas a-piece have lately been given for other three-year-old colts,) make up for the loss inseparable from such as, by mis-shape, diminutive size, and casualties, are culled out, and sold for what they will fetch, which seldom amounts to much.

VALUE OF STAKES AND PRIZES.

Agamemnon is made to say, that that man would be rich who had treasures equal to the value of the prizes the horses had won, which he offers to Achilles. We are inclined to think, that if this king of Argos could come amongst us now, he would find prizes more valuable than any contended for

* Uncas ran the mile at E. Feliciana, Louisiana, in 1'45½, 1'48, 1'47½.

Beta, at Nashville, in 1'45, 1'45, 1'57, 2'01.

The two-mile heats were run by Ann Hays, at New Orleans, in 3'43½, 3'42½.

The three-mile heats were run at the Union Course, Long Island, by Treasurer, in 5'42.

The four-mile heats were run by Fashion, on the Union Course, Long Island, in 7'32½, 7'45, May 10, 1842.—Ed. P. L. & A.

in his time; and that sterling cash, and not "the bubble honor," is the main object of the British sportsman on the turf. But here is the inducement to incur the great expenses of a racing breeding-stud. It is possible that a three-year-old *colt* might have won last year, at three starts, the enormous sum of 8350 guineas.* But even this is comparatively trifling when compared with the doings on the turf in the New World. A produce stakes of 5000 dollars each, 1000 forfeit, is to be run for over the New York Union Course in 1843, for which the produce of twenty-nine mares are named; and, supposing all to come to the post, the owner of the winner would be entitled to receive 145,000 dollars! The stakes closed in January, 1839, and the distance to be run is four miles.

COLOR OF THE THOROUGH-BRED HORSE.

• The beauty of forms observable in the animal system is subordinate to their general utility, and they please us in proportion to their aptitude to unite these two objects. We admire the elegant make of a swan, but the pleasure is doubled when we behold the ease and dignity of its motion. The colors, however, which Nature has bestowed with such profusion upon the surface of some of these animals, birds in particular, exhibit beauties independent of aptitude, and could only have been intended for their adornment. The prevailing color of the thorough-bred horse is peculiarly elegant and chaste, being a bright bay, with black mane and tail, and black legs to correspond, although occasionally relieved with a small white star on the forehead, or a white heel of the leg. It is remarkable, that what may be termed vulgar colors, such as light sorrel, or dun, or brown with mealy muzzle, are very seldom met with in the thorough-bred horse; and we know but one instance of the piebald, and very few roans.† Black is not common nor approved of, although several of our best racers, almost all the Trumpator blood, have been of that color, Smolensko amongst them. The real chestnut prevails a good deal, and is quite equal to the bay in the richness and brightness of its hues. Such was the color of Eclipse; and, as is the case with game-fowls, in the breeding of which there are instances of a reversion to the original color, after fifteen descents, it is not uncommon for thorough-bred stock to be chestnuts, although got by a bay stallion out of a bay mare, or from sire and dam of any other color, provided the blood runs back to his, Eclipse's source. Indeed, a small dark spot which that celebrated horse had on his quarter has been frequently found in his descendants in the fifth or sixth generation.

It is an old and trite saying, that "a good horse cannot be of a bad color;" nevertheless, colors of horses are, to a certain extent, indices of their physical powers. Such has proved to be the case with men; and it was found in the ill-fated Russian campaign, that men of dark complexions and black hair bore the severity of the climate better than men of an opposite appearance to them. It is, however, rather a remarkable fact, that by far the greater number of eminent English prize-fighters have been men of light, not dark complexion. The ancients reckoned thirteen colors of horses, giving the preference to bay (badices).‡

* *Vide Racing Calendar*, 1834, for amount of the twentieth Riddlesworth stakes, at Newmarket; the Derby and Oaks, at Epsom; and the St. Leger stakes, at Doncaster.

† See *The Cocker*, by W. SKETCHLEY, Gent. Lond. 1814. General Washington owned and ran one called the "Roan Colt."—*Ed. P. L. & A.*

‡ General Jackson preferred the iron-gray; and his performances of one sort and another on the turf were long strides in his advancement to the Presidency.—*Ed. P. L. & A.*

ENGLISH TABLES,

USEFUL TO THE READERS OF ENGLISH AGRICULTURAL WRITINGS.

As it is not convenient to be changing sterling into American currency in all cases of quotations from English journals, it will be well for every reader in the country to bear in mind that the pound sterling for ordinary calculations may be regarded as about equivalent to five dollars, the English shilling to 24 cents, or say a quarter of a dollar, and the English penny to two cents.

The stone weight, so often met with in English agricultural writers, sometimes means eight pounds, as for instance, when applied to meat; otherwise, according to the following tables, the most authentic to be found, 14 pounds would be understood as a stone.

No little perplexity is often experienced by ordinary readers, in understanding the true meaning of the terms employed to convey what writers intend to be understood, when speaking of measures of capacity, measures of weight, surface, volume, &c. We give, therefore, here from the London Literary and Scientific Almanac for 1846, the following useful tables, or such at least as we suppose may be so, to many of our readers. These tables will be found convenient for reference from time to time.

WEIGHTS AND MEASURES.

William the Conqueror introduced into England what was called **Troy Weight**, from Troyes, a town in the province of Champagne in France, now in the department of Aube; where a celebrated fair was held. The English were dissatisfied with this weight, because the pound did not weigh so much as the pound in use at that time in England. Hence arose the term **AVOIR DU POIDS**, which was a medium between the French and ancient English weights.

All **MEASURES OF CAPACITY** were first taken from Troy weight, and several laws were passed in the reign of Henry III., enacting that 8 lbs. Troy of wheat, taken from the middle of the ear, and well dried, should make one gallon of Wine measure; and eight such gallons made a bushel.

AVOIRDUPOIS WEIGHT was first made legal in the reign of Henry VII., and its particular use was to weigh provisions and coarse heavy articles. Henry fixed the stone at 14 lbs., which has been confirmed by a recent act of parliament.

Agreeably to the Act of Uniformity, which took effect 1st January, 1826,

The term measure may be distinguished into seven kinds, viz.: length, surface, volume, specific gravity, capacity, space, time, and motion.

The several denominations of these measures have reference to certain standards, which are entirely arbitrary, and consequently vary among different nations. In this kingdom,

The standard of Length is a Yard.

Surface, is a Square Yard, the $\frac{1}{4840}$ of an Acre.

Solidity, is a Cubic Yard.

Capacity, is a Gallon.

Weight, is a Pound.

The standards of angular measure and of time are the same in all European and most other countries.

I. MEASURES OF LENGTH.

The imperial standard yard is divided into three feet, and each foot into twelve inches, and its length is fixed, (see act of Parl. 5 Geo. IV. c. 74.) by reference to the length of the pendulum vibrating seconds in the latitude of London, in a vacuum at the level of the sea; the former being to the latter in the proportion of 36 imperial inches to 39.1393 imperial inches. The length of the seconds pendulum at Greenwich is 39.12929 inches; at Leith Fort, (nearly in the parallel of Glasgow,) under the same circumstances is 39.1555 imp. inches; and at New York, 39.1017 imp. inches. The imperial standard yard may, however, be more distinctly defined as the

distance between the points of oscillation and suspension of a pendulum vibrating (in a mean solar day in a vacuum at the level of the sea) at London 90088 times. The Scots' standard ell (the use of which is now abolished) measured 37 imperial inches. The French standard measure, (which is defined as the ten-millionth part of the quadrant of the terrestrial meridian,) measures 39·371 imp. inches, the French toise 76·735 imp. inches, and the French foot 1·06577 imp. foot. The French decimetre measures 3·937 inches, the centimetre·3937 of an imp. inch, and the millimetre ·03937 of an imp. inch.

An inch is the smallest lineal measure to which a name is given, but subdivisions are used for many purposes. Among mechanics the inch is commonly divided into EIGHTHS. By the officers of the revenue, and by scientific persons, it is divided into TENTHS, HUNDREDTHS, &c. By engineers it is frequently divided into twelve parts called lines, each of which may be made to represent one inch, and the inch one foot.

Inches.	Links.	Feet.	Yards.	Pole or Perch.	Chains.	Fur- longs.	Mile.
7·92	1						
12	1·515	1					
36	4·545	3	1				
198	25	16·5	5·5	1			
792	100	66	22	4	1		
7920	1000	660	220	40	10	1	
63360	8000	5280	1760	320	80	8	1

3 inches make a palm, 4 inches a hand, 5 feet a pace, and 6 feet a fathom.* In Cloth Measure $2\frac{1}{4}$ inches = 1 nail, 4 nails = 1 quarter, and 4 quarters = 1 yard.

The Surveyor's Chain contains 4 poles, or 22 yards, or 66 feet, or 792 inches, which being divided into 100 links, gives 7·92 inches for each link. The square Chain is equal to 484 square yards, or $\frac{1}{10}$ th of an acre. The Geometrical Pace is 5 feet, the Military Pace two and a half feet.†

3 miles form 1 league, 60 geographical miles, or $69\frac{1}{2}$ English miles equal 1 degree, 360 degrees equals the circumference of the Globe, or any circle.

CLOTH MEASURE.

Scotch and Irish linens, all sorts of woollen cloths, muslins, ribands, cords, tapes, &c., are measured by the yard.

Dutch linens, called Hollands, are bought by the Flemish ell, and sold by the English ell. The Flemish ell is also used in measuring tapestry.

The yard in cloth measure is the same as in Long Measure, but differs in its divisions and subdivisions.

$2\frac{1}{4}$ Inch	.	make 1 Nail	.	nl.
4 Nails	.	1 Quarter	.	qr.
4 Quarters	.	1 Yard	.	yd.
3 Quarters	.	1 Flemish ell	.	Fl. ell.
5 Quarters	.	1 English ell	.	Eng. ell.
6 Quarters	.	1 French ell	.	Fr. ell.
4 Inches	.	1 Hand, used for height of horses.		
6 Feet	.	1 Fathom, used in measuring depths.		

* The fathom is used in sounding to ascertain depths, &c., and for measuring cordage.

† The pace is a measure taken from the space between the two feet of a man in walking, usually reckoned at $2\frac{1}{2}$ ft., but the geometrical pace is 5 feet.

LONG MEASURE.

This measure is used to measure all things that have length, height and depth, without regard to breadth.

An inch is the smallest lineal measure to which a name is given, but the length of a mile is not the same in every country. The Scotch and Irish miles were formerly about $1\frac{3}{4}$ English, but are now the same as English. A Spanish and Polish mile is about $3\frac{1}{2}$ English. A Swedish, Danish, and Hungarian mile is from 5 to 6 English miles. A Russian mile or verst is about $\frac{3}{4}$ of an English mile; and the French toise is about 6 feet

The Dutch mile is		.	.	.	.	8101 yards.
Roman		.	.	.	.	1628 "
Arabian		.	.	.	.	2148 "
Persian Parasang		.	.	.	.	6086 "
4 Inches	.	.	make 1 Hand	.	.	hd.
$7\frac{1}{2}$ Inches	.	.	1 Link	.	.	lk.
12 Inches	.	.	1 Foot	.	.	ft.
$2\frac{1}{2}$ Feet	.	.	1 Pace	.	.	pace.
3 Feet	.	.	1 Yard	.	.	yd.
5 Feet (a geometrical)	.	.	1 Pace	.	.	pace.
6 Feet	.	.	1 Fathom	.	.	fath.
$5\frac{1}{2}$ Yards	.	.	1 Rod, Pole, or Perch	.	.	rod, p.
4 Poles, or 100 Links	.	.	1 Chain	.	.	ch.
40 Poles, or 10 chains	.	.	1 Furlong	.	.	furl.
8 Furlongs, or 1760 yards	.	.	1 Mile	.	.	mile.
6 Miles	.	.	1 League	.	.	lea.
60 Geographical Miles, or $69\frac{1}{2}$ English Miles	.	.	1 Degree	.	.	deg. or °
360 Degrees	.	.	The circumference of the Globe or any Circle.			

II. MEASURES OF SURFACE.

The imperial square yard contains 9 imperial square feet, and the imperial square foot 144 imp. square inches; the circular foot, (that is a circle whose diameter is 1 foot,) contains 113.097 square inches; and the square foot contains 183.346 circular inches (that is circles whose diameters are each 1 inch). The French square foot contains 163.563 imp. square inches, and the square decimetre 15.506 imp. square inches.

This measure is used for all kinds of superficial measuring, such as land, paving, flooring, roofing, tiling, slating, plastering, &c., &c., and any thing having length and breadth only.

Flooring, roofing, thatching, &c., are measured by the square of 100 feet, and bricklayers' work by the rod of $16\frac{1}{2}$ feet, the square of which is $272\frac{1}{2}$ feet, though this is partly a cubic measure, as the brickwork is reckoned to be one and a half brick thick.

Square Inches.	Square Links.	Square Feet.	Square Yards.	Square Pole or Perch.	Square Chain.	Square Rod.	Acre.
62.726	1						
144	2.295	1					
1296	20.661	9	1				
39204	625	272.25	30.25	1			
627264	10000	4356	484	16	1		
1568160	25000	10890	1210	40	2.5	1	
6272640	100000	43560	4840	160	10	4	1

Land is measured by a chain, called Gunter's Chain. It is 4 poles, or 22 yards long, and consists of 100 equal links, each $\frac{23}{25}$.

Ten chains in length and one in breadth, or 100,000 links, make an acre.

640 Acres	= 1 Square Mile.
30 Acres	= 1 Yard of Land.
100 Acres	= 1 Hide of Land.
40 Hides	= 1 Barony.

III. MEASURES OF VOLUME.

The imperial cubic (or solid) yard, contains 27 imperial cubic feet, and the imperial cubic foot contains 1728 imperial cubic inches. The cylindric foot (that is a cylinder 1 foot long and 1 foot in diameter,) contains 1357·17 cubic inches. The spherical foot (that is a sphere 1 foot in diameter) contains 904·78 cubic inches; and a conical foot (that is a cone 1 foot in height and 1 foot in diameter at the base) contains 452·39 cubic inches. The cubic foot contains very nearly 2200 cylindrical inches; (that is cylinders 1 inch long and 1 inch in diameter,) it contains very nearly 3300 spherical inches, (that is spheres 1 inch in diameter;) and it contains very nearly 6600 conical inches (that is cones 1 inch in height and 1 inch in diameter at the base.) The cubic metre contains 34·3166 imperial cubic feet; the cubic decimetre contains 61·027 imperial cubic inches, and the cubic centimetre contains ·061027 of an imperial cubic inch.

SOLID OR CUBIC MEASURE.

A cube is a solid body, and contains length, breadth, and thickness, having six equal sides. A cube number is produced by multiplying a number twice into itself, thus 64 is a cube number, and is produced by multiplying the number 4 twice into itself, as $4 \times 4 \times 4 = 64$.

1728 Inches	make 1 Foot.
27 Feet	1 Yard
40 Feet of Rough, or	} . . 1 Ton or Load.
50 Feet of Hewn Timber	
108 Feet	1 Stack of Wood
128 Feet	1 Cord of Wood.
277½ Inches	1 Imperial Standard Gallon.
2218½ Inches	1 Imperial Standard Bushel.

The English foot is to the Paris foot as 1 to 1·065977.

The English square foot is to the Paris as 1 to 1·136307.

The English cubic foot is to the Paris as 1 to 1·211277.

IV. STANDARD OF SPECIFIC GRAVITY.

The imperial cubic inch of distilled water, (according to act of Parliament, before cited,) weighed in air by brass weights, at the temp. of 62° Fah. therm. (the barometer being at 30 inches,) weighs 252·458 imperial Troy grains: and at 391 or the maximum density, it weighs 253 imperial Troy grains; consequently, the imperial cubic foot of distilled water at 621 weighs 997·137 imperial avoirdupois ounces. The cubic foot of water is commonly reckoned to weigh 1000 ounces, or $62\frac{1}{2}$ lbs. avoirdupois weight. The cubic centimetre of distilled water at 391 weighs 15·540 imperial Troy grains, and the cubic decimetre 155·40 imperial Troy grains, or 2·206 pounds imperial avoirdupois weight.

DIVISION I.—AVOIRDUPOIS WEIGHT.

This weight is used in almost all commercial transactions, and in the common dealings of life.

By an act of parliament passed the 5th of October, 1831, and which came into effect on the 1st of January, 1832, it is directed that all coals, cinders,

and culm, sold from and out of any ship or vessel in the port of London, or at any place within the cities of London and Westminster, or within the distance of 25 miles from the General Post-office, in the city of London, shall be sold by weight, and not by measure.

Coals sold in any quantity exceeding 500 lbs. are to be delivered to the purchaser in sacks containing either 112 lbs. or 224 lbs. net; 10 such sacks, or 2240 lbs. make a ton, equal to 20 cwt.; $25\frac{1}{2}$ cwt. are equivalent to 1 chaldron. A barge load or keel is 21 tons, 4 cwt.; and a collier, or ship load, about 20 such keels, or 424 tons.

By an act of Parliament which came into effect on the 29th of September, 1822, bread must be sold by the pound avoirdupois, and bakers are prohibited from selling by the peck loaf with its subdivisions.

Flour is sold nominally by measure, but actually by weight, at 7 lbs. avoirdupois to a gallon, 14 lbs. to a peck, &c.

By a late act of Parliament the legal stone is, in all cases, to consist of 14 lbs. avoirdupois; 8 such stones 1 cwt.; 20 cwt. one ton, &c.

Troy Grains.	Drams.	Ounces.	Lb.	Stones.	Qrs.	Cwts.	Ton.
437.5	16	1					
7000	256	16	1				
98000	3584	224	14	1			
196000	7168	448	28	2	1		
784000	28672	1792	112	8	4	1	
15680000	573440	35840	2240	160	80	20	1

Peculiar Weights belonging to this division :

Cwt. qr. lb.			
8 Pounds	=	1 Stone	Used for Meat.
14 Pounds	=	1 Stone = 0 0 14	Used in the Wool Trade.
2 Stone	=	1 Tod = 0 1 0	
$6\frac{1}{2}$ Tods	=	1 Wey = 1 2 14	
2 Weys	=	1 Sack = 3 1 0	
12 Sacks	=	1 Last = 39 0 0	

WE were lately conversing with a gentleman of character and intelligence not surpassed by any cultivator of the soil in this or any other country. His residence is near Darien, Georgia. He approved entirely of the doctrines maintained in this journal, as to the mutually friendly connection between American ploughs and American looms and anvils, and, to our surprise, maintained with the utmost confidence, that, for manufactures, there might be obtained, in Georgia, white labor as abundant and cheaper than in Massachusetts. There is no doubt that the same thing may be affirmed of the region of Virginia, where the power for manufactories is superabundant, and where demand would soon be followed by abundance of materials, as timber, wool, iron, &c. But for the "last thirty years" the Virginian has been convinced, he says, that there is nothing like that "free trade" under which the whole tide-water country has been as dormant as a fine buck shot down in his tracks.

Connubial Statistics.—The Lowell Offering states that in one mill, during the past eighteen years, eighty-two of the "boys," and four hundred and five girls have been married during five years; and from another mill one hundred and eighty-seven of the girls have been married during five years; and from a single room in another corporation twenty-eight were married in one year.

"THE VALLEY OF THE MISSISSIPPI."

MESSRS. EDITORS,—Under the above heading, in your number for this month, you have expressed very just views in relation to the subjects treated of in a little pamphlet of mine, which was a republication of a series of newspaper articles. This series has since been continued; and in subsequent articles I have endeavored to show *what* fabrics the West are *now* prepared to manufacture with profit, and have fully stated these to be the *coarser description of cotton cloth*, or sheetings, at and under number 14, heavy drillings, tickings, and cotton flannels, &c., on which we have such an immense advantage in transportation, and which require so little skill in the fabrication; and the opinion, that as soon as we should begin to erect mills for such manufactures, the East would not attempt to compete with us, was thus qualified. The object of this communication is to place myself right before those who have read your comments.

Of the 2,200,000 bales of cotton produced in this country, over 1,000,000 bales are probably made up into these coarse cloths. Cheap food, cheap power, (coal at $2\frac{1}{2}$ to 5 cents a bushel,) cheap material, and cheap transportation, give to Lower Ohio an advantage, in the manufacture of these goods, of at least 20 per cent. over New England, and of 30 per cent. over any position in Europe. Here, then, should be the *locus in quo* for the manufacture of these goods. As for female labor, (unskilled labor, just now,) we have it in great abundance. You of the East have employments of every kind for such labor, while we have comparatively none for it, save in our cities. The United States is the only agricultural country on earth in which females do not labor in the fields; and, in our western rural districts, in every family there is probably an average of two females above the age of fifteen, who would be glad to work for three years in a convenient and respectable cotton factory at less than eastern prices. For the manufacture of these *coarse* fabrics, three years are sufficient for our purpose. Under the admirable Lowell system, the operatives at fine, as well as coarse work, average only about four years in the mill. The erection of the mills I have advocated would give profitable employment for our females at the very time when their labor at home is comparatively unproductive, say from fifteen to eighteen; and, in most cases, they would obtain a better education during their three years at the mill than at home. The working up of this million of bales here, at present prices, would pay our carriers about one and a half millions of dollars more than they now receive, and would distribute among the laborers in the mill and the field, the *home* factors and stockholders, the enormous sum of sixty-two millions of dollars per annum. We should then control, not only the cotton, but the cotton fabric;—not the laces for the rich, but the covering for the masses;—the material and the product that has become a necessary of life to the savage and semi-barbarian, as well as to civilized man.

The advantage before stated applies as well to foreign as western demand; for we have, on the banks of our rivers, and above our coal beds, every material in the greatest abundance and perfection for ship-building. The county of Perry, Indiana, scarcely a nail's breadth on our map, has full 200,000 acres of wild land, a large part of which is subject to entry with soldiers' warrants, at a cost of seventy cents an acre; its surface is hilly, but its soil is fertile; in most of its hills, and above high-water, are horizontal strata of rich bituminous coal, averaging over four feet in thickness; above is the primeval forests of oak, poplar, chestnut, ash, black walnut, hickory, cherry, maple, and gum, in quantities sufficient for the construction of a navy; the Ohio borders this county for fifty miles; and, from nearly every one of its townships timber can

be floated in the spring to the Ohio, by the Anderson, Deer, Bear, and Oil creeks, (rivers;) under the surface is the best of iron ore; within a few miles are the rich hemp fields of Davis county, Kentucky; in Missouri are rich and convenient beds of copper; and all around is the cheapest food on earth. From this point ships of five hundred tons can be taken to sea with full freights during six months of the year. Why, then, should we not supply ships for the maritime districts of the world, now nearly denuded of timber, after they have borne our coarse cotton fabrics to the most remote consumers? Why should we continue to send our peculiar staples, corn, meat, and cotton, to be combined at Manchester into cloth, and then sent to China in ships made of the fresh-water timber of the St. Lawrence?

I, for one, deprecate the introduction among us of a manufacturing *caste*; I would afford no encouragement to hand-loom weavers, or the makers of tapestry and laces. Let these fabrics be still and for ever made where labor is cheap; but, unless we soon create a division of labor, and make a market for our agricultural products at home, we shall soon be cursed with the caste referred to.

You have doubtless observed that, within the last few years, a very large proportion of the foreign emigrants are mechanics and manufacturers; a large portion seek homes in the West; their preference is for the country and a freehold; but, as agricultural products are now at a low price, they are crowding into our cities, and bringing and communicating the vices of the districts from which they come. The only means of prevention before us are the reduction of agricultural labor; the working up of more of our materials; and the adoption of the Lowell system, by which but a few years of labor in the mill are required.

To my apprehension, we are just now in the transition state. In a very few years more the prices of our great staples must fall to a point much lower than now; and land and labor must correspond. Then we shall have a *mania* for manufacturing *every thing*. The general proposition will be—manufacturing labor, *ex necessitate rei*, must receive a higher reward than agricultural labor. As our people are peculiarly impulsive, they who can will rush at once into the new business; many will not have counted the cost; many will rely on general principles, and fail in consequence of their ignorance of qualifying causes. Whatever is unwisely done will not only affect ourselves, but the sections of the East with whom we should compete, and the Eastern cities by which we are supplied with foreign goods.

The Eastern factors and manufacturers, from Portland to Richmond, are mainly dependent on this great valley for their profits; if we are prosperous, so are they; if we are depressed, so are they; if we cannot pay for what they have sold, and have made to sell us, they are ruined. It is their interest that we should increase in wealth by every means in which wealth is produced; if we waste our labor in keeping up the expensive machinery of exchanging cheap and bulky articles, we have nothing to pay for the cost or profit of what is made abroad for us; but if our labor is mainly employed on the machinery of production, we can pay the highest profits on what we obtain from others.

If we now manufactured at home our axes, scythes, and chains, our coarse carpets, coarse cottons, &c., and then sent our surplus wheat, corn, and pork, to foreign markets, in vessels built of our cheap timber, and rigged with cordage made of our cheap hemp, we could give profitable employment to your Eastern artisans on fine work, and insure a satisfactory business to your factors who furnish us foreign luxuries.

And now, let me ask you, who are endeavoring to teach us how to grow rich and independent by bringing the loom nearer the cotton, to teach us

how to make and operate the loom and the spindle. You once gave us, month after month, the cost and the profits of the plough; you *detailed* all the best experiments made in the field. Now let us have, *in detail*, the cost, and the most profitable way of using the anvil.

Your machine-shops, as is said, now lack work; we need machinery, but we do not know how and where to get that machinery which will do the best and most work. If your machinists will show us the relative capacity of their machines, how we can obtain them, and how use them, and what profit we can make by using them, we may send on more orders than can be filled.

Supply us with the tools to make our coarse fabrics out of our heavy and bulky materials, then show us how to use these tools most advantageously; and, while we consume largely of and pay promptly for your costly broad-cloths, lawns, fine muslins, and imported silks, we can afford to pay more for the product of your seaboard fisheries than we now have to spare for all our imports.

Yours, respectfully, HAMILTON SMITH.

Louisville, Ky., Oct. 29, 1848.

THE IRISH POOR IN LIVERPOOL.

"THE Liverpool vestry have been appealing to Sir George Grey for relief from the prospective immigration of the Irish during the approaching winter: it has already commenced. Frightful consequences are apprehended from the outbreak of cholera among the crowded thousands. Last year, sixteen medical officers perished from fevers caught in attending the sick: and so great a mortality occurred in the permanent local population, that districts have been extensively depopulated, 4000 houses are uninhabited, and an expense of \$40,000 incurred. The fare from Dublin to Liverpool is only 1s., whilst it is 4s. to return. Sir George Grey, in reply, held out no hope of assistance."

Such are the results of the separation of the loom and the anvil from the plough and the harrow. Ireland abounds in rich lands untouched. She is capable of affording abundant food to quadruple her present population; but the colonial system has deprived her of all her consumers of food, and the producers are ruined. Forced to fly, as do the people of Virginia and South Carolina, they make their way to Liverpool or Glasgow, there to starve in wretched cellars, unless they can find means for further emigration, perhaps to die of ship fever on the way to Canada. England is now paying the forfeit of her system. Her Indian customers have been ruined; and every week furnishes new evidence that the power of India to consume foreign cloths has diminished, because of the impoverishing effect of a system that compels men to waste on the road the labor and the manure that should be applied to the work of production. Ireland is ruined; and the latest journals express the strongest apprehensions of the effect likely to result from the immense immigration of poor people who would stay at home if they could, and who *could* do so were it not that they have been limited to agriculture as their sole means of employment. The last number of the Westminster Review [Oct., 1848] speaks of the "certain and rapid deterioration in the condition of the bulk of the people of this island (Great Britain) consequent on the constant overflow into it of the increasing mass of Irish misery, without other limit than the reduction of our native population to the same level of squalid wretchedness." Famines occur in all countries in which the consumer does not take his place by the side of the producer, and pestilence follows in the wake of famine—and yet we have wise economists who teach us that the system which has ruined Ireland and India is the one under which we shall become most prosperous. Let them repeal the tariff of 1846, ineffective as it is, and they will have full opportunity to study the effect of the colonial system.

PRACTICAL HINTS FOR SMALL GARDENERS,
WHICH LARGER ONES MAY DO WELL TO HEED.

WE once got a lecture, by letter, from the late John Randolph, of Roanoke, for allowing a correspondent of the *Turf Register* to say that *Eclipse* was *sired* by *Duroc*, instead of *got* by him. He said it reminded him of an old maid in Virginia, who called a certain old-fashioned coin a *water-reen*. The word *cloaca* in the following means the privy.

MANURES.—Although it is as vain to attempt to keep a garden in good heart without manure as it is to try to preserve a good state of bodily health without a sufficiency of food, there are parties to be found every day who think the experiment worth trying. Because they keep neither horses nor pigs, they will not go to the expense of buying those substances by which the exhausted energies of the earth are restored. The starved ground, through this ungenerous treatment, is unable to repay the toil expended on it, and dwarfish and unhealthy productions are the result. Although the subject is one not very proper to be presented to ears polite, it is nevertheless of the utmost importance, and a few lines devoted to it will not be very badly spent. The question of manures may be called a national one, intimately connected with our wealth and happiness, and any one who points out the most economical modes of fertilizing the land confers a benefit on his fellow-creatures. Our observations now refer to small gardens, but a principle will pervade them applicable in some degree to the largest farms.

The resources of an ordinary house and garden, if properly husbanded, will go far towards manuring a good-sized piece of ground. All vegetable refuse, leaves, stalks, &c., should be collected into a heap, and when thoroughly rotted, will make the very best manure for flower-beds or for plants in pots. The flower-garden will never require a dressing more powerful than good leaf-mould—some special things, roses, for instance, excepted. If the sweepings of paths and of sitting-rooms, or of the house generally, which contain a good deal of sand, are mixed with this vegetable refuse, in a year a good compost will be ready for use. Wood ashes are highly beneficial for any purposes, but cinders are not desirable things except in heavy clayey soils. The fine soft ashes arising from coal, thoroughly burnt, may be always used with advantage. Bones, old rags, cuttings of hair, &c., are all useful; and the amount of these things in a year from a small family is very great. Those who live in country places may often have road scrapings for the trouble of fetching, and these are great improvers of a manure heap. All these matters should be turned occasionally, and used when thoroughly rotten and incorporated.

But the *cloaca* is the grand source of manure when properly managed, which is not the case in one instance in ten. In most houses there is a common receptacle, into which all substances, liquid and solid, are thrown, becoming in the process of accumulation a great nuisance, and a still more formidable one when removal becomes necessary. Now a little management will prevent the nuisance, and turn the affair to the best account. The *cloaca* and the dust-hole should always be adjoining, that the dust and ashes from the house may be spread over the surface of the former *every day*. Bad odors are thus neutralized, and the whole contents are removed without any unpleasantness. One thing, however, must be sedulously attended to in connection with this arrangement: no slops must be allowed to find their way into this receptacle, or the object will be defeated. All liquids brought out of the house in the morning must be disposed of in another way. If you have no kitchen garden, or no meadow land, get rid of these slops by the common sewer. If you have a larger garden, or land, have some heaps of hungry soil always ready, and saturate them with the contents of the

slop-pail. By removing these heaps and placing others, every thing will be saved, and a most efficient manure provided at small expense. When the cloaca is emptied, the mixture must stand for a year, and be turned over two or three times before it is used. If these regulations are observed, more comfort will be secured in domestic arrangements, and every thing will be available for the land.

“PLAINDEALER” is a little too plain for us. His denunciation of seedsmen, and of agricultural implement-makers, is too indiscriminate and sweeping for our columns. That impositions are frequently practised, it needs no ghost to tell us; but will “Plaindealer” tell us among what class of people rogues and cheats are not to be found?—or can he designate a profession or class of people more useful to the farmer than the honest seedsman, and the manufacturer of sound, well-made agricultural implements and machinery—to whose ingenuity, by-the-by, the farmer is much more indebted for labor-saving contrivances than to his own class.

Than imposture, in regard to the genuineness and the soundness of seed and fruit-trees, nothing can be more pernicious, or worthy of exposure and denunciation; and if “Plaindealer” will *specify cases*, he shall find us not backward in stigmatizing them with all our power; but who does not know, of that class, gentlemen as public spirited and as trustworthy as among the same number of cultivators?

How often, among farmers, do we find people ready to take advantage of the public credulity to put off some wonderful kind of wheat or potato, or corn, springing from some miraculous origin—a few grains found in a mummy-box, or in a pigeon’s crop, of which the fortunate owner has a *small* parcel that he will let go as a great favor at 200 per cent. over the market price!

Foreign Provisions.—The following table has been published of the exports from the United States to Great Britain during the last five years. The increase in all articles of animal food, such as bacon, pork, butter, and cheese, appears, says the Mark Lane Express, absolutely astounding.

EXPORTS FROM THE UNITED STATES TO GREAT BRITAIN.

Articles.	1843.	1844.	1845.	1846.	1847.
Oil, sperm, gls. . .	325944	295867	907597	626633	638780
Oil, whale, gls. . .	68728	345656	184898	84356	209299
Staves, m. . . .	467	85	331	2560	2074
Naval stores, brls. .	145066	270317	279263	305654	245779
Beef, brls. . . .	6886	43117	41188	80820	66473
Tallow, lbs. . . .	3653614	4657200	5243440	6125452	5924156
Hides, No. . . .	8882	33107	41179	67058	24481
Pork, brls. . . .	3230	10280	14140	13001	73940
Bacon, bales . . .	656328	350189	96907	530026	14367105
Lard, lbs. . . .	4569484	8976805	5678675	8211389	17798770
Butter, lbs. . . .	1059776	521829	530549	515519	1235071
Cheese, lbs. . . .	2313643	5278965	5934202	6840373	13662280
Wheat, bush. . . .		22238	2010	974398	2544563
Corn, bush. . . .		89073	135688	1192680	15526525
Flour, brls. . . .	19436	167296	35355	1015244	2457086
Cornmeal, brls. . .	3	29	1	50165	713083
Rice, tierce	9216	16125	18127	38271	48618
Wool, lbs. . . .				610625	349576
Hops, lbs. . . .		4166	68894	72252	441006

ON THE RELATIONS OF THE PLOUGH, THE LOOM, AND THE ANVIL.

LETTER FROM COL. CAPRON.

Laurel Factory, December 21, 1848.

MY DEAR SIR :—To answer your letter of the 3d, with satisfaction to you or myself, would require more time and reflection than I have been able to give it since it came to hand—and the closing up of the old year, with all the multifarious interests under my charge, will prevent me replying fully to your inquiries for some weeks to come.

Your letter shall lie before me to remind me, (if that be necessary,) of the duty I owe you, and the great cause you are so ably advocating, in the Plough, the Loom, and the Anvil; and shall receive my attention at the first practicable moment.

It is of vital importance to the Southern States—in fact their only salvation—*diversity of employment* with a *home market*, is what they want. Let every man, woman, and child become producers as well as consumers, in some of the various pursuits which will naturally spring up, by the conjunction of the plough, the loom, and the anvil, within their own borders, (as is the case in Massachusetts,) and the Southern States will be the great States of the Union.

There is no obstacle, either in climate, soil, or population, but what would yield to the march of improvement; if once the really great talents of the South be directed to this object, with one half the energy and ingenuity displayed in making a President, or in trying to reason themselves into the belief that it is legislating “at the expense of the *many* for the benefit of the *few*,” that causes the *universal* diffusion of wealth amongst the *teeming* population of the Eastern States, and their rapid advancement to wealth and prosperity—whilst at the same time the *sparse population* of the Southern States are taking the Irishman’s advance of two steps backwards to one forward.

Very truly yours,

HORACE CAPRON.

The stumbling-block which keeps the Northern manufacturer from coming with his skill, and his possession of, or his ability to command capital, to put them both in force in various branches of manufacture in the South, (where so many natural advantages exist,) is the apprehension that in the South it is impracticable to make sure of the *requisite and suitable labor*. Without possessing, on this point, the full and exact knowledge that would enable us to speak with that degree of confidence which would be proper, and which we should desire to do, as a faithful interpreter or organ between the North and the South; and, aware that Col. Capron, educated in the North, and possessing, in an eminent degree, capacity and experience, could give the requisite information; having been now for a series of years managing a large factory in a sparsely settled slave-holding country, we applied to him for his views, of which this is the first instalment, or rather “note of preparation.” Thus much to explain the preceding letter, and such as he may find leisure to favor us with hereafter, on a subject which is every day engrossing more and more of public attention. To us there seems to be something wanting in the public sentiment, and in the legislation of Maryland and other Southern States, to attract capital from the great commercial emporiums more into the country. Each county should have its little woollen factory and savings bank, ready to lend money to industrious mechanics, and manufacturers, and farmers, to buy materials, and implements, and lime, and manures. Something should be done—we can’t exactly say what—to resist the centripetal force which draws all the surplus labor, all the surplus population, and all the surplus capital from the country into one great commercial city. It would be far better for a State to have ten towns scattered over it, of 10,000 inhabitants each, than to have 100,000 in one corner of the State. In the first case, almost every man would have the loom and the anvil near his plough. He could supply his consumer with little or no loss of time, or cost of transportation. In the last case, the cost of going and coming, of sending and fetching, consumes a great part of his substance. Let the constant study of the farmer and planter be—to draw the manufacturer to the side of the agriculturist. Let such be the spirit and tendency of all legislation that bears on the landed interest.

"COMMON SENSE" IN "THE UNION."

DURING three years of laborious attention, ensuing the 4th of March, 1844, while conducting the FARMERS' LIBRARY, in New York, with anxiety for its success, the greater as our pay was specific, and otherwise satisfactory, our old friend Ritchie, of the Union, could never find time to bestow on our labors one word of editorial sympathy and encouragement, although he often expressed, and doubtless felt a wish to do so. As, however, it was obvious he had much higher objects to look after, there was left to us only the mortification never to be able to command a single friendly pat on the back, with a word of benediction, from an old brother chip of the press—the more reasonably to be expected, as then, at least, we had given no political offence by attempting, as now, to reconcile the interests and combine the influence of our countrymen, working at "The Plough, the Loom, and the Anvil." On the contrary, during the period referred to, under a sense of responsibility for the interests of others, which we had no right to put in jeopardy by mingling political opinions with practical instruction, we had so held on the even tenor of our neutral way, as to elicit, gratefully be it acknowledged, expressions of good-will from a great number of leading presses politically affiliated with the Union—so much so, that, vain as it turned out to be, the hope was not altogether unnatural, that these expressions reaching it from so many friendly sources, might move the great central organ to echo some of them on a low key—anyhow! Well, at the termination of that three years' engagement, feeling the hand of time beginning to press more heavily, and seeing not a "shot in the locker" for a rainy day, we determined to launch a smaller bark on our own hook, and in it put afloat once more, in the hope that, with untiring industry in the cause of those who believe with us in the natural friendliness of the plough, the loom, and the anvil, some further service may yet be rendered to them all, and especially to the first; and something be yet garnered up in the way of a little property for the down-hill of life. This might seem presumptuous, but had we not seen older and not more diligent—though it may be more skilful and lucky chaps, empowered to furl their sails at the going down of the sun, hop ashore, and snapping their fingers in the very face of Miss Fortune, sit down and laugh at the vicissitudes of political life, with ample means to enjoy all the luxuries of sense and all the pleasures of imagination? Didn't we, in fact, hear Col. Wilder, presiding at the late magnificent Horticultural Festival in Boston, relate how a gentleman, even at threescore-and-ten, being laughed at for commencing to plant fruit trees, answered that he felt bound to discharge the debt he owed to his predecessors; and actually lived, for many years, to enjoy the delicious fruits of his septuagenary plantations!

As now, however, we were heretically attempting to bring about a union of the American plough, loom, and anvil, we abandoned, of course, all hope of a kind word for our enterprise from the "Union" aforesaid; but, tugging at the oar, and asking only for *bread*, what was our surprise to have, from the sling of our old friend, a great *stone* cast with violence by some powerful hand, at our little bark, with obvious intent to crush it at a single throw, denouncing its contents as a baggage of absurd—ridiculous—preposterous—nonsense!—made up of infectious contraband, to be eschewed by the very class of our fellow-citizens for whom we have been laboring, through good and evil fortune, all our lives! A worse than wooden horse, pregnant with doctrines deserving only the countenance of that odious class of monopolizers (the manufacturers) whose very position and calling it is, by the bye, to demand and fashion the raw material, and to pay for and consume, the products of the planter and the farmer, whose true interests we are endeavoring to promote!

For this compendious denunciation of the Plough, the Loom, and the Anvil, by the correspondent of the Union, some comfort may be found, however, in the very many approvals which every day brings, similar to the following, from the Hon. Caleb Smith, of the House of Representatives :

"The only sound principle of political economy is that which you so ably advocate—to place the Loom and the Anvil in the immediate vicinity of the Plough, that the products of the earth may be converted into the various forms which the wants of the community demand, without the waste of labor required to transport them to remote points to effect this conversion, and return them in their varied forms to supply the wants of the consumer."

Such is the doctrine which we must still be allowed to advocate until convinced of our error, if error it be ; and "Common Sense" may rest assured that if he wishes to arrest its progress, particularly in the *South and West*, he must be up and doing ; for, although some half-dozen, in Virginia particularly, among whom the Union circulates, as it does everywhere, have followed his advice to let go the handles of "the plough," at least fifty others, for one of these, have come to take hold of them ; and if ever there was, within our observation, a revolution of public sentiment at work on any subject, there is one in progress in the South and West in favor of a policy which shall compel the light machines of conversion to come and take their place by the great and expensive machine of production. One has only to look at the public journals to see that this sentiment has been gathering, like a young storm, within the last six months. *Vires acquirit eundo*. The people begin to see that *that is* "common sense," and it will require something more than old stereotyped assertions to arrest it.

Never having been favored by the Union in the way of an "exchange," even with a weekly, it was only after several weeks, and then by mere chance, that our attention was called to this attack on our journal that appeared in it on the 17th of December last, under the signature of "Common Sense." Every part of our February number is at this moment in the hands of the printer, and a large portion of it in type, and it is therefore impossible to bestow upon him any thing like measure for measure.

It was the "common sense" of the people who lived in ante-revolutionary times that induced them to protest against the colonial system, by aid of which Great Britain was to be made the workshop of the world. It was "common sense" that taught them that under a system which separated the plough, the loom, and the anvil, they must ever remain poor, as have Canada and *all the other colonies* of Great Britain, and therefore it was that they made the Revolution. It was "common sense" that prompted the earliest administration of the government to desire to *protect* American industry. It was "common sense" that led the patriot Jefferson to see how indispensable it was that the manufacturer should take his place by the side of the agriculturist. It was "common sense" that prompted South Carolina to adopt the system of protection at the close of the war of 1812. "Common sense" made the tariff of 1828. "Common sense" taught the people that they were ruined under the Compromise Act, and made the tariff of 1842. "Common sense" it is that is now at work to alter the tariff of 1846, and thus enable the planter and farmer to enjoy that *real freedom* of trade which results from making their exchanges with their neighbors, who consume on the land the products of the land, rather than that *bastard* freedom of trade by which men are compelled to depend on foreign markets, and to pray for potato rots, that they may find a market for their surplus corn.

The *un-"common sense"* of the few is at war with the "common sense" of the many. It repealed the tariff of 1842, and it would sustain that of 1846, in defiance of the experience of the present year. We go for the "common sense" of mankind, against the uncommon sense of those who

would direct them, and therefore it is that we advocate the policy by aid of which the farmer and planter shall be enabled to return to the land the refuse of its products, with constantly increasing return to his labor, rather than that which tends to compel him first to exhaust his land and then to run away himself, as the people of Virginia and South Carolina are now doing.

In due season we shall return to this subject. In the mean time, however, we would suggest to our friend "Common Sense" [he should change his signature to Uncommon Sense,] that he should read the questions appended to an article in our January number, and qualify himself to answer them. A more careful study of the subject, would, we believe, satisfy him that the course advocated by this journal is the one that would most tend to improve the condition, physical, moral, and political, of the people of the Union. There are more things in this world than are as yet "dreamt of in his philosophy."

P. S.—To the exclusion of some prepared matter, we beg leave to refer to the notice of "Common Sense" the following extracts, much more to his taste than any thing we could say. They are from an able and ingenuous work on the agriculture and resources of the British Colonies, written by a loyal subject of the crown, on the very eve of that Revolution which, while it made us independent in name, left us, for certain national ends, from that day to this, more or less subject to the colonial policy of the mother country. If the mantle of this author has not fallen on "Common Sense" of the Union, it would be difficult to say who can show better title to it. The doctrine of both leads precisely to the same result, to wit: to "carrying off the surplus population from the central and northern colonies," and thus "keep off the dangerous rivalry which there is much reason [for England] to fear from the manufactures and commerce of the northern colonies." The danger, let her and let "Common Sense" be assured, is now as great from the Southern and Western States, as then they were from the northern colonies, and when that danger shall have been consummated, we shall then, and only then, *cease to be colonies*.

The author had been advocating the policy of opening new countries and encouraging emigration to the West; and, for that purpose, recommended that government should provide means at *Fort Pitt*; but our canals and railroads, and the Tariff of 1846, and the doctrine of "Common Sense," are far more efficient—and hence the paralysis of all the old Atlantic States.

"In case of such a settlement being made, the whole valuable part of that continent, the southern division of it, would then be in the desirable state of improvement: the population, from being so spread round a great extent of frontier, would increase without giving the least cause of *jealousy to Britain*, land would not only be plentiful, but plentiful where our people wanted it; whereas at present, the population of our colonies, especially the central ones, is confined; they have spread over all the space between the sea and the mountains, the consequence of which is, that land is become scarce, that which is good having become all planted or patented, the people therefore find themselves *too numerous for their agriculture, which is the first step to be manufacturers, that step which Britain has so much reason to dread*.* Nothing therefore can be *more political*, than to provide a superabundance of colonies to take off all those people that find a want of land in our old settlements; and it may not be one or two tracts of country that will answer this purpose; provision should be made for the convenience of some, the inclinations of others, and every measure taken to inform the people of the colonies that were growing too populous, that land was plentiful in other places, and granted on the easiest terms; and if such inducements were not found sufficient for *thinning the country considerably*, government should by all means be at a part of the expense of transporting them. Notice should be given that sloops should always be ready at *Fort Pitt*, or as much higher on the *Ohio* as it is

* Is not the correspondent of the Union of the same opinion?

navigable, for carrying all families, without expense, to whatever settlements they choose on the Ohio or the Mississippi. Such measures, or similar ones, would carry off that surplus of population in the central and northern colonies, which has been, and will every day be more and more the foundation of their manufactures. They never could establish such fabrics, while the plenty of good land in a good climate was so great as to afford every man an opportunity of settling; for while that was the case, none would let themselves as workmen in a manufacture. Consistent with these ideas, we see that those colonies where the good land is most plentiful in a good climate, the manufactures are trifling, or none to be found, which is the case with the tobacco colonies and with the southern ones; but in the northern settlements, where these circumstances are different, we there find many fabrics.*

"Nothing can be more fortunate than the navigation of the Ohio quite to the Apalachian mountains, at the back of the centre of all our colonies, since by that means people may, with only a small or a moderate journey, arrive at a navigation that will carry them through all that immense tract which we may in future colonize, a part of which we are now about to settle, and yet more of which I am urging the propriety of likewise settling. Were it not for this vast navigation, to the very spot almost that one would wish to have it, there would be difficulties in the people getting to the countries we wanted them to settle in; but as we possess this great advantage, it would be unpardonable not to make effectual use of it, in case the establishment of new colonies did not of itself draw the whole surplus of population away from those provinces, the numbers in which want so much to be thinned.†

"Nor is the advantage of drawing off people from the northern colonies confined to the prevention of manufactures; it is further of vast consequence to take them from countries that produce nothing valuable in a British market, and fix them in others abounding with staples of high importance to the commerce and manufactures of the mother country: this single idea ought to be the corner-stone of all the regulations and measures adopted by this country in her transactions with America; and if it is well pursued in future, will keep off the dangerous rivalry, which there is so much reason to fear, from the manufactures and commerce of the northern colonies."

New York Canal Trade.—The Albany Evening Journal gives the following official statement of the articles which have arrived at the Hudson River by all the canals during the last four years.

The following is a comparative statement of the aggregate value of the articles:

	1846.	1847.	1848.
The Forest, . . .	\$8,589,291	\$8,798,373	\$6,994,459
Agriculture, . . .	33,662,818	54,624,849	37,336,390
Manufactures, . . .	4,805,799	6,024,518	3,834,360
Merchandise, . . .	276,872	517,594	593,619
Other articles, . . .	3,770,466	3,127,080	2,210,623
Total, . . .	\$51,105,256	\$73,092,414	\$50,969,461

There has been a steady increase in bacon, cheese, and butter.

Bacon, . . .	lbs. 4,000,500	4,902,000	8,183,285
Cheese, . . .	" 35,560,118	40,844,000	43,278,526
Butter, . . .	" 21,477,657	22,724,000	23,729,997

While flour, wheat, rye, and corn fell off in 1848, barley steadily increased—as in

	1846.	1847.	1848.
	1,427,953	1,528,090	1,548,197

Wool fluctuated most in

	1846.	1847.	1848.
	8,866,376	12,044,000	8,529,331

* So we are going to find many fabrics in the South and West, or there is no truth in the signs of the times. The Northern States (*then* ceasing to be colonies) are going to make our laces and fine fabrics of wool, and cotton, and silk—while the North and West will make their own coarser fabrics.

The very best of negro clothing is now made at Augusta, Georgia. The ball is rolling.

† So probably thinks our friend "Common Sense."

ELEMENTS OF AGRICULTURE,

*For the use of Primary and Secondary Schools. Translated from the French, by F. G. SKINNER,
Junior Editor of the "Plough, the Loom, and the Anvil."*

By the well-known and popular house, Messrs. Carey & Hart, (the publishers,) a copy of this little work has been laid on our table for examination, and we have not the slightest hesitation in saying, with entire confidence, that it is one of *the* books which has been wanting for the sons of planters and farmers, and ought to be in the hands of every boy in the country, who can read, and has sufficient capacity to understand the simplest propositions.

It differs from other catechisms, and is new in this important particular—that instead of being gotten up in the form of question and answer, thus allowing room for the matter to be committed to memory without being understood; in this case the information is first given, and at the end is a series of questions, so skilfully framed as to draw from the pupil such answers as cannot fail to show that he has or has not *studied the chapter with attention*. This will be better understood by giving a single Lesson, as for example :

THE DIFFERENT OBJECTS EXISTING IN NATURE.

8. The art of agriculture requires some knowledge of the different objects that exist upon the surface, and in the interior of the earth. It presupposes, consequently, some acquaintance with natural history, and principally with botany, a science that treats of plants and their properties.

9. All bodies that exist upon the surface, or in the interior of the earth, are divided into three classes, called the kingdoms of nature, namely: 1. The animal kingdom, which includes man and all animals. 2. The vegetable kingdom, in which are included all vegetables, from the largest tree to the smallest plant. 3. The mineral kingdom, to which belong all rocks, stones, earths, and metals.

10. Among the beings that exist, some are endowed with life, such as men, animals, vegetables, or plants; the others are inanimate, or without life, as minerals, rocks, earths, &c. The first are called *organic bodies*; the second, *inorganic bodies*.

11. The organs are those parts of a body created for the maintenance of life.

12. It is easy to establish the distinction that exists between the beings of the three kingdoms. Those that belong to the animal kingdom grow, live, feel, and are gifted with the faculty of moving themselves, or *locomotion*. Those of the vegetable kingdom grow, and live; a proof of this last property is the faculty that they possess of nourishing and reproducing themselves. Those of the mineral kingdom grow only, and this growth takes place in a manner contrary to that of organized bodies. These last increase always from the interior to the exterior, whereas minerals increase by the addition to their surface of small particles that adhere to them.

13. The life of animals and vegetables exhibits a difference worthy of remark; it is that vegetables seem to be endowed with the reproductive power in all their parts. Thus, when the limb of a tree is cut off and planted in the earth, it may produce another tree. This is not the case with animals.

14. Minerals, and other brute bodies, united in large masses in the bosom of the earth, form rocks that are in a continual state of decomposition. The particles derived from this decomposition constitute, by their mixture with organic remains, the different species of soil that are cultivated. In other words, *soils are composed of a mixture of organic and inorganic remains*.

QUESTIONS.—1. The art of agriculture presupposes a knowledge of what? 2. What is botany? 3. Into how many kingdoms is nature divided? 4. What are organic and inorganic bodies? 5. What are organs? 6. How do we distinguish between the beings of the three kingdoms? 7. How do inorganic bodies increase? 8. What remark can be made upon animal and vegetable life?

The whole work is thus divided :

PART FIRST.—General Notions on the Art of Cultivating the Soil, and of the different Objects that exist in Nature.—Divisions in the Art of Cultivation.—The different Objects existing in Nature.

Vegetable Anatomy and Physiology.—The Organs of Plants.—The Root.—The Stem and

Leaves—Functions that they fulfil in the Act of Nutrition.—The Organs of Reproduction.—Fruit.—Germination.—Moral Reflections.

The Reproduction of Vegetables.—Reproduction by Generation.—Reproduction by Propagation.—Layering.—Multiplication of Plants by Grafting.—Inoculating.

PART SECOND.—*General Consideration of the Soil.*—The Causes that Affect the Value of the Soil.—The Mineral Parts of the Soil.—Silix, or Silica.—Clay.—Carbonate of Lime.—Plaster, Marl, Magnesia, Iron.—The Organic Parts of the Soil.—The Formation of Humus, and its Properties.—The Action of Humus in the Soil.

The Physical Properties of Soil.—Texture and Depth of the Soil.—Situation of the Surface.—Subsoil.—The Effects of Climate on Vegetation.—The Effect of Climate upon Cultivation and upon Animal Economy.

PART THIRD.—*Ameliorators.*—General Views of Manures, Ameliorators, and Stimulants.—Liming Lands, or the Use of Lime as an Ameliorator.—Marl as an Ameliorator.—Clay and Sand as Ameliorators.

Stimulants.—Ashes.—Plaster.—Paring and Burning.

Manures.—Formation, Composition, and Action of Manures.—Litter, and Liquid Manures.—Management of Manure.—Varieties of Manure.—Folding Sheep.—Animalized Manures.—Vegetable Manures.

Finally, we have no hesitation in adopting the Preface of the translator, as indicative of the nature and value of the “Elements” before us :

When it is considered that a very large majority of the millions who are constantly in training at our country schools are to be cultivators of the soil, and that on their general intelligence, with some knowledge of the principles of their own profession, must in a great measure depend, not only the prosperity of American agriculture, but the permanence of our free institutions; every lover of his country must reflect with regret on the want of more diffusive and perfect systems of general education, and especially on the absence of a *plain, intelligible, elementary work on the principles of agriculture*, for the use of our common schools. This want, it is now confidently believed, has been supplied by what is here offered, entitled “**ELEMENTS OF AGRICULTURE FOR THE USE OF COMMON SCHOOLS**,” which has lately appeared in France, under the auspices of the department for public instruction, and been sanctioned, as will be seen, by the strong recommendation of men of the highest distinction and authority for learning and benevolence.

This little work is purely elementary in its character, and so plainly written, that while the principles are brought within the comprehension of children who have attained their twelfth year, it cannot fail to be entertaining and auxiliary, if not instructive to their teachers. If in itself it does not make those who study it accomplished agriculturists, it will at least pave the way for their becoming such, by explaining the rudiments of those sciences with which Agriculture is naturally connected.

As will be perceived, by reference to the table of contents, the work is divided into three Parts. The first treats of **NATURAL HISTORY**, explaining, in a clear and simple manner, the difference between **ORGANIC** and **INORGANIC SUBSTANCES**, Animal and Vegetable Life, Vegetable Reproduction, &c. The Second Part treats, in like perspicuous and intelligible style, of **CLIMATE**, and its effects upon animal and vegetable life. **MINERAL MANURES**, more properly called by the French writers *ameliorators*, and **ANIMAL and VEGETABLE MANURES**, with their management and application, make up the Third Part. Finally, it has been slightly modified, as was needed, to adapt it to the soil and climate of the United States.

This little work, destined, as we believe, to find its way into every school in the Union, is very appropriately

“**DEDICATED**, by the Translator, with unaffected respect, and a high sense of the true dignity of their profession, to **THE TEACHERS OF YOUTH** in the United States : the followers of a pursuit the most responsible and honorable, when properly understood ; and yet, in proportion to its importance, the least honored and the worst paid, of all others.”

In this instance there can be no objection on the score of cost, since the price is, as already stated, but **TWENTY-FIVE CENTS**.

We will send it to any one who will remit us one, two, or five subscribers to “The Plough, the Loom, and the Anvil.” The postage will be 4 or 5 cents.

CORN-PRODUCING CAPACITY OF CLARKE COUNTY, VIRGINIA.

To the Editors of the Plough, the Loom, and the Anvil:

GENTLEMEN:—While looking over the Alexandria Gazette, some time since, I was struck with an account of a great crop of corn, grown by Mr. Blair, near Washington, D. C. It has given me a desire to inform you (who I suppose take an interest in such things) of the product of some of our Clarke lands. To commence, I will give an account of what I consider a most remarkable crop of corn, grown by myself, in 1846, upon 12½ acres of land, rented of Mrs. P., (a neighbor of mine,) and for which I agreed to pay one half in case the crop amounted to 10 bushels or more; if less, two-fifths. The lot had been used as a meadow for twelve years, the timothy had given place to a sward of English grass. It was ploughed in the latter part of March, as deep, and the slice turned as flat as could be done, with one of our large three-horse Barshear ploughs, than which there can be no better for our limestone country. It was harrowed twice, once with the furrow, and again diagonally. It was then laid off 4½ feet, the rows running north and south, care being taken not to disturb the sward. The corn was rolled in plaster and dropped as near 2½ feet in the row as could be guessed at. The season being very fine, we were not particular in thinning, so that in many places there were four stalks left in the hill. With the exception of a little corner, in which we ran a few furrows one evening, (not that it was wanted, but because we had not any thing better to do, having just finished working our own crop,) it was not touched by any implement during the season. Although it was a very wet summer, and the neighboring fields exceedingly grassy, when the corn was cut off of this lot, there was not a spire of grass or a weed to be seen, and the land was as light as an ash-bank, so to speak. When the corn was gathered I gave to Mrs. P. one half, which amounted to 100 bushels of good corn, besides several of nublins. So much for 1846: now for 1848. There is an island in Shenandoah river, containing within the enclosure, (which is of stone,) 103 acres, of which, 2 acres produced 100 bushels of oats; 51 acres produced 1530 bushels of wheat; 50 acres produced 400 bushels of corn, which is not an average crop for the land. The island belongs to Mr. G. H. B., whose word I have for what is stated above. (Mr. G. H. B. was for many years a subscriber to the American Turf Register, and is perhaps known to you.)

Now, Messrs. Editors, you see what we can do with the plough, and Col. Ware showed you at the Baltimore Fair what we are doing in the way of sheep. If you will come on next Fall, we will be most happy to give you an opportunity to judge of them in the shape of grass-fed saddles, in which it is thought we excel. Hoping that you may be the means, through your valuable journal, of bringing the loom and the anvil to the plough,

I am your subscriber, and obedient servant,

NATHANIEL BURWELL, Jr.

Mill Wood, Clarke County, Va., December 26, 1848.

We should like to know from the intelligent and respected writer of the above account—perspicuous and interesting as it is—what was the kind of corn cultivated, and what is the usual price of land in that region? Is their corn usually sent to market, and at what distance, and kind, and cost of transportation per bushel, or is it converted for the most part into beef and mutton? Do they *corn feed* through the winter the bullocks brought down from Monroe, Bath, and Greenbriar, and other counties? What is the usual time and cost of buying these bullocks? How long are they fed with corn—and with what quantity—and at what cost? What per centage is usually added to the weight of the bullock, and is any account taken of the value of his manure, and what is it estimated at? Being fed on corn, it ought to be very rich. In England they feed on oil cake, for the sake of the additional value to the manure: otherwise, and without reference to that, they would not go to the expense. But such is their estimate of the value of oil cake manure, that, the incoming tenant is required to pay *one half* of the oil cake bill, fed to cattle that he never saw, on account of the benefit of the manure which is to enure to him, and which was provided by the outgoing tenant! Has any one in this country made any practical inquiry into these matters? If not, ought it not to be done?—or does it become farmers to go on acting the part of unreasoning beings, following in the exact wake of those who went before, even though the course should lead to deterioration of lands and dispersion of the cultivators of lands? Do, gentlemen, friends of Clarke county, of whom we had the pleasure to see and make acquaintance, some at the White Sulphur in 1847—let us hear from you on these subjects. Do you still think you can compete with Albemarle in the skill and in the productiveness of your husbandry? We ask for information.

EDITORS P. L. & A.

P. S.—Can there be a more superfluous expenditure of the small means at command of Agricultural Societies than to go on offering premiums for large crops on single acres. Would not premiums for the best answers to such questions, for instance, as we have here hastily put, be more useful?

ADDRESS TO THE PLANTERS OF HANCOCK CO., GA.

"To the Planters of the Cotton Growing States.—The time has at last arrived, and which might have been foreseen, when you are obliged to look into your condition; and if you desire to better it, the examination must be thorough. For many years after the cultivation of cotton became the chief object of Southern agriculture, money invested in land, negroes, mules, &c., made better returns of profits than its legal interest, or than labor applied to most other objects of industry. This is far from being the fact now; and it is this depreciation of the value of our labor, compared to the value of labor applied to other objects and by other people, that makes it our duty to look for the cause and find a remedy if we can, unless, indeed, we are willing to sacrifice our property and lose our equal position among the States. It sometimes happens that men suffer themselves to be brought to the brink of ruin because the approach is so slow as to be almost imperceptible; and even then, when seen and felt, rather live upon the hope that the times will change, than by a vigorous examination of the remedy, retrieve their prosperity.

"The planters of the cotton growing States for years have seen their lands growing poorer, and the price of their staple product gradually declining. Like the ebb tide, every receding wave leaves the sandy beach a little more exposed; and unlike the tide in this, that there will be no reflux wave of prosperity if our agricultural policy is unchanged.

"We flatter ourselves that the political troubles which now interrupt the regular labor of all Europe, are the causes of the present depressed price of our cotton. In this we deceive ourselves; the effect is but a shade in the price. As all experience proves that the price or value of any commodity whatever depends upon the quantity produced and the demand for it. If all the tillers of the earth were to produce bread, it would have very little exchangeable value, and this is more certainly true of every article of less importance; and so if we continue to increase the quantity of cotton, the price will continue to decline. To understand effects from causes, we must avoid fallacies; and that of expecting better prices when Europe shall become tranquil, is shown by the fact that the article had been for a series of years declining before her present troubles began. The true cause of the depressed, if not ruinous, condition of cotton planters, is therefore clear enough, the *over-production*; and to this cause may be referred the fact within our experience that large crops uniformly lower the price, and short ones increase it. We need not find fault with the English or French, or the New Englander, (if anybody has been silly enough to do so,) for buying our cotton at 4½ cents instead of 15 cents—it is our own folly and over-production that is the cause.

"If we intend to recover our former prosperity, and preserve even the present value of our lands and negroes, we must understand not only our present condition, but what it is likely to be in future. The inquiry may very properly begin with our lands, for they are the most important, and we may take for granted the fact never yet disputed and incontrovertible, that no country can long continue to be prosperous where the system of agriculture practised by its people uniformly, year by year, impoverishes the soil. What would have been the present condition of England, Belgium, Germany, and our Northern States under our system of cultivating the earth? We can best answer the question by taking a survey of our own country, which will tell our future history.

"The lands of the Southern States, taken as a whole, including that portion of the valley of the Mississippi properly southern, when first settled were more valuable (latitude, climate, soil and extent considered,) than those of any other country. To be within the bounds of truth, they would produce (with bad tillage) 30 bushels of Indian corn and 8 or 10 cwt. of seed cotton per acre; less than half a century has reduced their productiveness in the older States to 12 bushels of corn and 3 or 4 cwt. of cotton. Continue the same destructive system, judge of the future by the effects of the past, and our progress to ruin will be accelerated as our lands are impoverished, and in a few years we shall be ready if not compelled to abandon the country. But it may be said, as has often been said and done by the planter, that he will continue to make cotton, to buy more negroes, to make more cotton; and when his plantation is totally ruined, move to Alabama, Mississippi, Arkansas, and finally to Texas. Shall we delude ourselves by resorting to this merely temporary expedient? for in truth it is no remedy, as it increases for a time the quantity of cotton, and does not restore the worn-out lands. But if it benefited the emigrant from the old State temporarily, a moment's reflection will show its utter insufficiency to meet our case. The same agricultural folly and improvidence which has impoverished the lands of the older cotton growing States, is already felt in Alabama, and will most certainly produce the same result in all the cotton growing States. The time may therefore be computed from Georgia and Carolina statistics, and is not very distant, when we shall be presented with the startling fact that we can produce neither corn nor cotton."

The above extract from an address to the planters of Hancock County, Georgia, is worthy of the most earnest attention of all our agricultural readers, whether engaged in the raising of cotton, or tobacco, or wheat, or Indian corn. It exhibits a fair view of the course of operation throughout the whole of this vast country. Every thing that is raised on the land is sold from off the land, and it and its owner become impoverished together. Constant taking out of the meal-bag and putting nothing in, soon brings a man to the bottom.

It is urged that every man shall raise less cotton, but something must be substituted. Were it not, the remedy would be worse than the disease. What then shall it be? Indian corn? Of that there is already a superabundance, and it is *too bulky* to go to distant markets. Wherever the earth yields largely, the product must be eaten on the ground, or it is worthless. The planter cannot raise potatoes, or turnips, or carrots, of all of which the earth yields by hundreds of bushels, because he has nobody at hand to consume them. Give him a consuming population, and he will obtain as many *bushels* of those commodities as he now obtains of *pounds* of cotton, and then he will make the poor land rich by aid of the manure yielded by the food produced on rich ones. Population makes the food come from the rich soils. Let every planter commit to memory this single sentence, and let him unite with his neighbors in this effort to procure the adoption of the measures required for bringing the loom and the anvil to take their natural places by the side of the plough and the harrow. Let him do this, and he will find the growth in the home-consumption of cotton so rapid that in a little time he will be enabled to obtain for *half the quantity* sent abroad *larger* returns than he now has for the whole. The talk about over-production will then cease, for he will then enjoy that real freedom of trade which consists in applying his land and his labor to the production of either food or cotton, instead of being, as now, compelled to flood the world with cotton, because of his inability to raise any thing else, and to receive for it five cents per pound, instead of the ten that he would have were he less dependent on its cultivation.

DAIRY COWS.

As to the best breed of cows for the dairy, I should say, from some experience, that a good Alderney will equal, if not surpass, any other breed; I have two, mother and daughter, (the latter I bred, and is a beautiful animal and has now her second calf;) they produce together upwards of 400 lbs. of good yellow butter in 12 months, and the skim-milk is as good as new from some cows; generally, the cream churns sooner, and the butter is primer than from most other breeds. I have a six months' old calf from the old Alderney by a thorough-bred short-horned bull, which promises to make a fine cow; it has most of the properties of a good dairy cow, with a touch equal to a thorough-bred short-horn. I think, for quantity and quality, there is no kind of cattle that will surpass a good Alderney, (not even an Ayrshire,) or a cross with a good thorough-bred short-horned bull, for dairy purposes: this cross will also be found to feed well when done with for the dairy. I do not breed from my heifers until they are about two years old, and they are kept well, but not expensively. I know nothing of the Kerry breed, but should imagine they are more suitable to their poor native soil than good, rich grazing land; at least, I think they would not pay either for dairy or butcher for the extra good keep. A good sow or two are indispensable where cows are kept; they have been very profitable the last few years.

T. Q. W. R.

THE CHEESE TRADE.

It is said that the following particulars are authentic, and may be relied on.

The Western Reserve Chronicle says,—By a reference to the books at the canal office, we are enabled to state the amount cleared for market during the last six years, viz.:

Lbs.	Lbs.
1842 . . . 1,230,168	1845 . . . 2,995,376
1843 . . . 2,415,177	1846 . . . 4,763,723
1844 . . . 3,944,404	1847 . . . 6,599,170

The Albany Journal gives the following statement of the amount of cheese received at Albany and Troy during the past twelve years:

Lbs.	Lbs.
1836 . . 14,060,000	1842 . . 19,004,000
1837 . . 15,500,000	1843 . . 24,331,000
1838 . . 13,810,000	1844 . . 26,677,500
1839 . . 14,530,000	1845 . . 27,542,861
1840 . . 18,820,000	1846 . . 35,560,180
1841 . . 14,170,000	1847 . . 40,814,000

The following are a part of the exportations of cheese from the State of Ohio:

	Lbs.
Trumbull	4,000,000
Portage	2,000,000
Geauga	250,000
Madison	200,000
Ashtabula	5,000,000

Five counties, 11,450,000

It appears, then, that the State must export at least twelve millions of pounds of cheese—probably much more.

Of butter, the counties engaged in exporting are much more numerous. The following are part:

	Lbs.
Carroll	75,000
Crawford	200,000
Geauga	50,000
Harrison	250,000
Hancock	35,000
Huron	100,000
Muskingum	200,000
Morgan	20,000
Trumbull	160,000

Nine counties, 1,020,000

The export of the State is probably about four millions of pounds. The dairy products of Ohio are, therefore, very large.

ON FARM MANAGEMENT.

PRIZE ESSAY—By J. J. THOMAS.

THE great importance of performing in the best manner, the different operations of agriculture, is obvious to every intelligent mind, for on this depends the success of farming. But a good performance of single operations merely, does

not constitute the best farmer. The perfection of the art, consists not only in doing everything well, individually, but in a proper adjustment and systematic arrangement of all the parts, so that they shall be done, not only in the best manner and at the right time, but with the most effective and economical expenditure of labor and money. Every thing must move on with clock-work regularity, without interference, even at the most busy seasons of the year.

As this subject includes the whole routine of farming, in a collected view, as well as in its separate details, a treatise upon it might be made to fill volumes; but this being necessarily confined to a few pages, a general outline, with some remarks on its more essential parts, can only be given.

CAPITAL.—The first requisite in all undertakings of magnitude, is to "count the cost." The man who commences a building, which to finish would cost ten thousand dollars, with a capital of only five thousand, is as certainly ruined, as many farmers are, who, without counting the cost, commence on a scale to which their limited means are wholly inadequate. One of the greatest mistakes which young farmers make in this country, in their anxious wish for large possessions, is, not only in purchasing more land than they can pay for, but in the actual expenditure of all their means, without leaving any even to *begin* the great work of farming. Hence, the farm continues for a long series of years poorly provided with stock, with implements, with manure, and with the necessary labor.—From this heavy drawback on the profits of his land, the farmer is kept long in debt; the burthen of which not only disheartens him, but prevents that enterprise and energy which are essential to success. This is one fruitful reason why American agriculture is in many places in so low a state. A close observer, in traveling through the country, is thus enabled often to decide from the appearances of the buildings and premises of each occupant, whether he is in or out of debt.

In England—where the enormous taxes of different kinds, imperiously compel the cultivator to farm well, or not farm at all—the indispensable necessity of a heavy capital to begin with, is fully understood. The man who merely *rents* a farm there must possess as much to stock it and commence operations, as the man who *buys* and pays for a farm of equal size in the best parts of western New-York. The result is, that he is enabled to do every thing in the best manner; he is not compelled to bring his goods prematurely to market, to supply his pressing wants; and by having ready money always at command, he can perform every operation at the very best season for product and economy, and make purchases, when necessary, at the most advantageous rate. The English farmer is thus able to pay an amount of tax, often more than the whole product of farms of equal extent in this country.

The importance of possessing the means of doing every thing at exactly the right season, cannot be too highly appreciated. One or two illustrations may set this in a clearer light. Two farmers had each a crop of ruta-bagas, of an acre each. The first, by hoeing his crop early, while the weeds were only an inch high, accomplished the task with two days work, and the young plants then grew vigorously and yielded a heavy return. The second, being prevented by a deficiency of help, had to defer his hoeing

one week, and then three days more, by rainy weather, making ten days in all. During this time, the weeds had sprung up six to ten inches high, so as to require, instead of two days, no less than six days to hoe them; and so much was the growth of the crop checked at this early stage, that the owner had 150 bushels less on his acre, than the farmer who took time by the forelock. Another instance occurred with an intelligent farmer of this State, who raised two fields of oats on land of similar quality. One field was sown very early and well put in, and yielded a good profit. The other was delayed twelve days, and then hurried; and although the crop was within two-thirds of the amount of the former, yet that difference was just the clear profit of the first crop; so that with the latter, the amount yielded only paid the expenses.

Admitting that the farm is already purchased and paid for, it becomes an object to know what else is needed, and at what cost, before cultivation is commenced. If the buildings and fences are what they should be, which is not often the case, little immediate outlay will be needed for them. But if not, then an estimate must be made of the intended improvements and the necessary sum allotted for them. These being all in order, the following items, requiring an expenditure of capital, will be required on a good farm of 100 acres of improved land, that being not far from the size of a large majority in this State. The estimate will of course vary considerably with circumstances, prices, &c.

1. LIVE STOCK.

The amount will vary with the fertility and products of the land, its quality, and situation with regard to market. The following will approximate the average on good farms, taken at the spring of the year, or commencement of work:

3 horses, at \$80	\$240
1 yoke oxen	75
8 milch cows, at \$15	120
10 steers, heifers and calves	70
20 pigs, at \$3	60
150 sheep, at \$2	300
Poultry, say	5
Total	\$870

2. IMPLEMENTS.

2 plows, fitted for work	\$20 00
1 small plow, do	6 00
1 cultivator, best kind	7 00
1 drill barrow	5 00
1 roller	5 00
1 harrow	10 00
1 fanning mill	20 00
1 straw cutter	15 00
1 root slicer	8 00
1 farm wagon, with hay rack, &c.	70 00
1 ox-cart	50 00
1 horse-cart	45 00
1 double farm-harness	30 00
1 horse-cart harness	18 00
1 root-steamer, or boiler	20 00
1 shovel and one spade	2 50
3 steel-plate hoes	2 25
2 dung forks	2 25
3 hay forks	3 00
2 hand rakes	0 25
1 revolving horse-rake	8 00
2 grain cradles	8 00
2 scythes	4 00

1 wheelbarrow	4 00
1 pointed shovel	1 25
1 grain shovel, or scoop-shovel	1 25
1 pick	1 50
1 mall and wedges	2 50
2 axes	4 00
1 hammer	0 50
1 wood-saw	1 50
1 turnip-hook	0 75
1 hay-knife	3 00
2 apple-ladders, (for gathering,)	1 50
2 large baskets	1 25
2 hand baskets	0 50
1 tape-line, (for laying off land,)	2 00
2 sheep-shears	2 00
1 grindstone	3 00
1 steelyard, large, and one small	2 00
1 stable-lantern	0 50
1 currycomb, one brush	0 75
1 half-bushel measure	1 00
20 grain-bags	8 00
1 ox-chain	3 00
1 crowbar	2 00
1 sled and fixtures	30 00

Total \$437 00

Other articles might be included, as subsoil plow, sowing machine, &c. A thrashing machine is not named, as it is better to employ itinerant thrashers, and save capital. To the preceding amount ought to be added one-tenth the expense of fencing the farm, as fences need renewing at least once in ten years. Every farmer should also be supplied with a small set of carpenter's tools, which would cost about twelve dollars, for repairing implements in rainy weather, and other useful purposes. This set should include saw, hammer, augers, planes, adz, mallet, chisels, square, breast-bits, &c., and by the convenience and economy afforded, would soon repay their cost.

3. SEEDS.

2½ bush. clover seed, for 10 acres	\$15 00
2 " corn, " 6 "	1 00
30 " potatoes, " 2 "	7 00
3 lbs. ruta бага seed, " 1 "	1 50
2 " field beet " " "	1 00
2 " carrot " " "	1 00
30 bush. seed wheat, " 20 "	30 00
10 " oats, " 5 "	2 50
10 " barley, " 5 "	4 00

Total \$63 00

4. LABOR.

Supposing the owner to labor with his own hands, as every owner should, so far as is consistent with a general superintendence of all parts, which would probably amount to one-half the time,—he would need besides through the season two men and one boy, and in the winter one man; during haying and harvest he would require two additional hands. The men, boarding themselves, could be had for fifteen dollars per month in summer, and twelve in winter; if boarded, the cost of their meals would make up the deficiency in wages to the same amount.—The expenditure needed then, would be,

2 hired men 8 months, 15 per month	\$240 00
1 " boy " 6 "	48 00
Day labor in harvest	32 00
Total	\$320 00

5. MAINTENANCE OF ANIMALS.

Cattle and sheep would need hay till fresh pasture, and horses hay, and also a good supply of oats till after harvest. All would be benefited by a liberal feeding of roots, including swine. The amount of all these supplies needed, would be about

7 tons of hay.....	\$42 00
200 bushels of oats.....	50 00
400 " roots.....	50 00
Total.....	\$142 00

RECAPITULATION.

Live stock.....	\$870 00
Implements.....	437 00
Seeds.....	63 00
Labor.....	320 00
Maintenance of Animals.....	142 00
Total.....	\$1,832 00

The amount of capital needed the first year, in stocking and conducting satisfactorily the operations of one hundred acres of improved land, several items being doubtless omitted.

If this is a larger sum than the young farmer can command, let him purchase only fifty acres, and reserve the rest of the purchase money which would be needed for the 100 acres, to commence with on the smaller farm; and he will scarcely fail to make more, than on a larger, with every part subjected to an imperfect hurrying, and irregular management. He may calculate perhaps on the returns of his crops in autumn, at least to pay his hands. But he must remember that the first year of farming is attended with many expenses which do not usually occur afterwards; which his crops may not repay, besides supporting his family and paying his mechanic's and merchant's bills. The first year must always be regarded with uncertainty; and it is better to come out at the end, on a moderately sized farm, well tilled, and in fine order, with money in pocket, than on a larger one, in debt; and hired hands, a class of men not to be disappointed and who ought not to be, waiting for their pay. There are a far greater number of farmers embarrassed and crippled by placing their estimates of expenses too low, than of those who swing clear and float freely by a full previous counting of cost.

SIZE OF FARMS.—After what has just been said, the cultivator will perceive in part the advantages of moderately sized farms for men in moderate circumstances. The great disadvantage of a superficial, skimming culture, is obvious with a moment's attention. Take the corn crop as an illustration. There are a great many farmers to my certain knowledge, whose yearly product per acre does not exceed an average of twenty-five bushels. There are other farmers whom I also well know, who obtain *generally* not less than sixty bushels per acre, and often eighty to ninety-five. Now observe the difference in the profits of each. The first gets 250 bushels from ten acres. In doing this, he has to plow ten acres, harrow ten acres, mark out ten acres, find seed for ten acres, plant, cultivate, hoe, and cut up ten acres, besides paying the interest on ten acres, worth from three to five hundred dollars. The other farmer gets 250 bushels from four acres at the farthest; and he only plows, plants, cultivates, and hoes, to obtain the same amount, four acres, which from their fine

tilth and freedom from grass and weeds, is much easier done, even for an equal surface. The same reasoning applies throughout the farm.—Be sure then, to cultivate no more than can be done in the best manner, whether it be ten, fifty, or five hundred acres. A friend who owned a four hundred acre farm, told me that he made less than his next neighbor, who had only seventy-five. Let the man who applies a certain amount of labor every year to his farm, reduce its dimensions until that labor accomplishes everything in the very best manner. He will doubtless find that the amount of land will thus become much smaller than he supposed, more so than most would be willing to reduce it; but on the other hand, the nett proceeds from it will augment to a greater degree than perhaps could possibly be believed.

But let me not be misunderstood. Large farms are by no means to be objected to, provided the owner has capital enough to cultivate every part as well as some of our best small ones are cultivated.

As an example of what may be obtained from a small piece of land, the following products of fifty acres are given, and are not more than I have known repeatedly to be taken from good land by several thorough farmers:

10 acres wheat,	35 bush. per acre, at \$1.00,	\$350
5 " corn,	90 " "	40 180
2 " potatoes,	300 " "	20 120
1 " ruta-bagas,	800 " "	10 80
6 " wint. apples,	250 " "	25 375
6 " hay,	2½ tons "	6.00 90
10 " pasture, worth		60
5 " barley,	40 bush. "	40 80
5 " oats,	50 " "	20 50

Total products of fifty acres of very fine land, \$1,385

This aggregate yield is not greater than that obtained by some who might be named from a similar quantity of land. Good land could be brought to that state of fertility very easily at a total cost of one hundred dollars per acre, and then it would be incomparably cheaper than many large poor farms at nothing; for while the fifty acres could be tilled for three hundred and eighty-five dollars, leaving one thousand dollars nett profits, large poor farms hardly pay the work spent upon them. One proprietor of such a farm declared—"It takes me and my hired man all summer at hard work to get enough to pay him only."

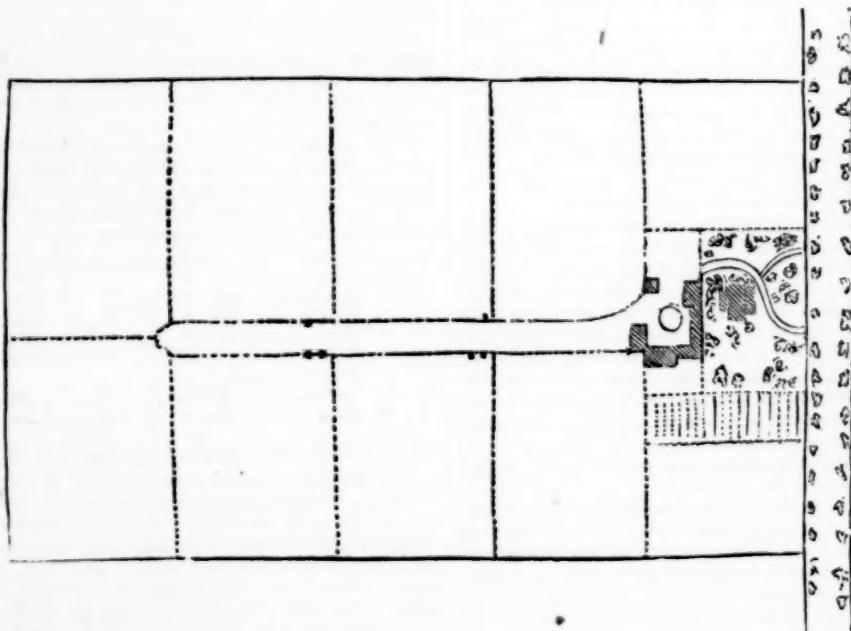
LAYING OUT FARMS.—This department is very much neglected. The proper disposition of the different fields, for the sake of economy in fencing, for convenience of access, and for a full command of pasture and protection of crops at all times, has received comparatively little attention from our agricultural writers and from farmers.

Many suppose that this business is very quickly disposed of; that a very few minutes, or hours at most, will enable a man to plan the arrangement of his fields about right. But this is a great error. Even when a farm is of the simplest form, on a flat uniform piece of ground, many things are to be borne in mind in laying it out. In the first place, we all know that the *fencing* of a moderately sized farm costs many hundred dollars. It is very desirable to do it well, and use at the same time as little material as possible. To do this much will depend on the shape of the fields. A certain length of fence will enclose more land in the form of a *square*, than in any other practicable shape. Hence fields should approach this form as nearly

as possible. Again, the disposition of lanes is a matter of consequence, so as to avoid unnecessary length and fencing, and occupy the least quantity of ground.

But these rules may be materially affected by other considerations. For instance, it is very desirable that land of similar quality may be in the same enclosure. Some may be naturally too wet for any thing but meadow or pasture; some may be much *lighter*, and susceptible of plowing, while others are not; some may be naturally sterile, and need unusual manuring, with green crops. All these should, as far as practicable, be included each in its own separate boundary. The situation of surface-drains, forming the boundaries of fields, may influence

their shape; facilities for irrigation may have an essential bearing; convenience for watering cattle is not to be forgotten. Where, in addition to all these considerations, the land is hilly, still more care and thought is required in the subdivision, which may possibly require years of experience; but where fixed fences are once made, it is hard to remove them; hence a previous thorough examination should be made. A farm road, much used for heavy loads, should be made hard and firm, and cannot be easily altered; it should consequently be exactly in the right place, and be dry, level and short—the shape of adjoining fields even conforming to these requisitions; but a road little used should not interfere with the outlines of fields.



A specimen of laying out a farm is given in the preceding plan. It is of the very simplest kind, or a right-angled parallelogram, on nearly level land—a form that often occurs. It lies on one side of a public road, which is lined with forest trees. The middle enclosure on the road contains the dwelling, the barn, and other out-buildings. It is planted with trees for shade, ornament, and domestic enjoyment—not set “all in a row,” but in the graceful or picturesque style which distinguishes a beautiful natural landscape. On one side are the fruit, kitchen, and flower gardens—the lot containing them being oblong, to separate certain portions of the fruit garden for *pigs*—the sovereign remedy for the curculio; the orchard may occupy the lot adjoining. The remainder of the farm is divided into fields nearly square, each being entered from the lane by a good gate. These fields may be increased or lessened in size without altering the position of the lane. They should always be sufficiently numerous to admit a good rotation, and to separate at all times the pasture from the tillage land.

In laying out a farm with a very uneven surface, or irregular shape, it would be best to draw, first, a plan adapted to smooth ground, as the one just given; and then vary the size and shape of the fields, the distance of the lane from the cen-

tre, its straightness, &c., according to the circumstances of the case.

FENCES.—The kind of fence used, and the material for its construction, must depend on circumstances and localities. A good fence is always to be preferred to an imperfect one; though it cost more, it will more than save that cost, and three times the amount in vexation besides, by keeping cattle, colts, and pigs out of fields of grain. A thriving farmer, whose whole land, except a small part with stone wall, is enclosed by common rail fence, with upright cedar stakes and connecting caps at the top, finds that it needs renewing once in six years. He accordingly divides his whole amount of fences into six parts, one of which is built new every year. All is thus kept systematically in good repair. Stone walls, if set a foot below the surface to prevent tumbling by frost, are the most durable fence. Hedges have not been sufficiently tried. The English hawthorn is not well adapted to our hotter and drier climate; and though sometimes doing well for a time, is not to be depended on. The buckthorn in New-England, and the Newcastle and Washington thorns in Pennsylvania and Delaware, have succeeded finely.

GATES.—Every field on the farm should be entered by a good self-shutting and self-fastening

gate. A proper inclination in hanging will secure the former requisite, and a good latch, properly constructed, the latter. Each field should be numbered, and the number painted on the gate-post. Let the farmer who has *bars* instead of gates, make a trial of their comparative convenience, by taking them out and replacing them without stopping, as often as he does in one year on his farm, say about six hundred times, and he cannot fail to be satisfied which is the cheapest for use.

BUILDINGS.—These should be as near the centre of the farm as other considerations will admit. All the hay, grain, and straw, being conveyed from the fields to the barn, and most of it back again in manure, the distance of drawing should be as short as possible. This will, also, save much traveling of men and of cattle, to and from the different parts of the farm. The buildings should not, however, be too remote from the public road; and a good, dry, healthy spot should be chosen. The dwelling should be comfortable but not large—or it should, rather, be adapted to the extent of the lands. A large, costly house, with small farm and other buildings, is a bad indication of management. The censure of the old Roman should be avoided, who, having a small piece of land, built his house so large that he had less occasion to plow than to sweep.

The barn and out-buildings should be of ample extent. The barn should have space for hay, grain, and straw. It is a matter of great convenience to have the straw for littering stables, housed, and close at hand, and not out of doors, under a foot of snow. There should be plenty of stables and sheds for all domestic animals. This provision will not only save one-third of the fodder, but stock will thrive much better. Cows will give much more milk—sheep will yield more and better wool—and all will pass through the winter more safely. The wood-house near, or attached to the dwelling, should never be forgotten, so long as comfort in building fires, and economy in the use of fuel, are of any importance.

A small, cheap, moveable horse-power should belong to every establishment, to be used in churning, sawing wood, driving washing machine, turning grindstone, cutting straw, and slicing roots.

There should be a large root cellar under the barn, into which the cart may be *dumped* from the outside. One great objection to the culture of ruta-bagas and beets, in this country,—the difficulty of winter keeping,—would then vanish.

Both barn and house cellars should be well coated on the bottom and sides, with water-lime-mortar; which is a very cheap and effectual way to exclude both water and rats.

CHOICE OF IMPLEMENTS.—Of those which are much used, the very best only should be procured. This will be attended with a gain every way. The work will be easier done and it will be better done. A laborer who, by the use of a good hoe for one month, can do one quarter more each day, saves, in the whole time, an entire week's labor.

CHOICE OF ANIMALS.—The best of all kinds should be selected, even if costing something more than others. Not "*fancy*" animals, but those good for use and profit. Cows should be productive of milk, and of a form adapted for beef; oxen, hardy, and fast-working; sheep, kept fine by never selling the best; swine, not the *largest* merely, but those fattening best on

least food. A Berkshire, at 200 pounds, fattened on 10 bushels corn, is better than a "land pike" of 300 fattened on 50 bushels.

Having now taken some notice of the necessary items for commencing farming, it remains to glance a little at

SOILS AND THEIR MANAGEMENT.

Soils are of various kinds, as heavy and light, wet and dry, fertile and sterile. They all require different management, in a greater or less degree.

Heavy soils are often stronger and more productive than light; but they require more labor for pulverization and tillage. They cannot be plowed when very wet, nor so well when very dry. Although containing greater or less portions of clay, they may be distinguished, as a class, from lighter soils, by the cloddy surface the fields present after plowing in dry weather; by their cracking in drouth; and by their adhesiveness after rains.

Sandy and gravelly loams, also contain clay, but in smaller quantity; so that they do not present the cloddiness and adhesiveness of heavy soils. Though possessing generally less strength than clay soils, they are far more easily tilled, and may be worked without difficulty in wet weather; they do not crack or bake in drouths. Indian corn, ruta-bagas, and some other crops, succeed best upon them. Sandy soils are very easily tilled, but are generally not strong enough. When made rich, they are fine for some succulent crops.

Peaty soils are generally light and free, containing large quantities of decayed vegetable matter. They are made by draining low and swampy grounds. They are fine for Indian corn, broom corn, barley, potatoes, and turnips. They are great absorbers, and great radiators of heat; hence they become warm in sunshine, and cold on clear nights. For this reason they are peculiarly liable to frosts. Crops planted upon them must, consequently, be put in late—after spring frosts are over. Corn should be of early varieties, that it may not only be planted late, but ripen early.

Each of these kinds of soil may be variously improved. Most of heavy soils are much improved by draining; open drains to carry off the surface water, and covered drains, that which settles beneath. An acquaintance covered a low, wet, clayey field with a net work of underdrains, and from a production of almost nothing but grass, it yielded the first year forty bushels of wheat per acre—enough to pay the expense; and admitted of much easier tillage afterwards. Heavy soils are also made lighter and freer by manuring; by plowing under coatings of straw, rotten chips, and swamp muck; and in some rare cases, by carting on sand—though this is usually too expensive for practice. Subsoil plowing is very beneficial, both in wet seasons and in drouth; the deep, loose bed of earth it makes, receiving the water in heavy rains, and throwing it off to the soil above, when needed. But a frequent repetition of the operation is needed, as the subsoil gradually settles again.

Sandy soils are improved by manuring, by the application of lime, and by frequently turning in green crops. Leached ashes have been found highly beneficial in many places. Where the subsoil is clayey, which is often the case, and especially if marly clay—great advantage is derived from shoveling it up and spreading it on

the surface. A neighbor had twenty bushels of wheat per acre on land thus treated, while the rest of the field yielded only five.

MANURES.—These are first among the first of requisites in successful farm management. They are the strong moving power in agricultural operations. They are as the great steam engine which drives the vessel onward. Good and clean cultivation is, indeed, all-important; but it will avail little without a fertile soil; and this fertility must be created, or kept up, by a copious application of manures. For these contribute directly, or assist indirectly, to the supply of nearly all the nourishment which plants receive; it is these, which, produced chiefly from the decay of dead vegetable and animal matter, combine most powerfully to give new life and vigor; and thus the apparently putrid mass, is the very material which is converted into the most beautiful forms of nature; and plants and brilliant flowers spring up from the decay of old forms, and thus a continued succession of destruction and renovation is carried on through an unlimited series of ages.

Manures possess different degrees of power, partly from their inherent richness, and partly from the rapidity with which they throw off their fertilizing ingredients, in assisting the growth of plants. These are given off by solution in water, and in the form of gas; the one as liquid manure, which, running down, is absorbed by the fine roots; and the other as air, escaping mostly into the atmosphere, and lost.

The great art, then, of saving and manufacturing manure, consists in retaining and applying to the best advantage, these soluble and gaseous portions. Probably more than one-half of all the materials which exist in the country, are lost, totally lost, by not attending to the drainage of stables and farm yards. This could be retained by a copious application of straw; by littering with saw-dust, where saw-mills are near; and more especially by the frequent coating of yards and stables with dried peat and swamp muck, of which many parts of our State furnish inexhaustible supplies. I say *dried* peat or muck, because if it is already saturated with water, of which it will often take in five-sixths of its own weight, it cannot absorb the liquid portions of the manure. But if it will absorb five-sixths in water, it will, when dried, absorb five-sixths in liquid manure, and both together form a very enriching material. The practice of many farmers, shows how little they are aware of the hundreds they are every year losing by suffering this most valuable of their farm products to escape. Indeed, there are not a few who carefully, and very ingeniously, as they suppose, place their barns and cattle yards in such a manner on the sides of hills, that all the drainage from them may pass off out of the way into the neighboring streams; and some one mentions a farmer, who, with preëminent shrewdness, built his hog pen directly across a stream, that he might at once get the cleanings washed away, and prevent their accumulation. He of course succeeded in his wish; but he might, with almost equal propriety, have built his granary across the stream, so as to shovel the wheat into the water when it increased on his hands.

The loss of manure by the escape of gas is often very great. The proof of this was finely exhibited by Humphrey Davy, in an experiment, performed by filling a large retort from a heap of fermenting manure, placing the beak

among the roots of some grass. Nothing but vapor left the vessel, yet in a few days the grass exhibited greater luxuriance round the beak of the retort than any of the surrounding portions. Hence the superiority of unfermented manure—the rich portions are not yet lost. And hence, too, the importance of preventing this loss by an immediate application and plowing into the soil, and also by mixing it in composts with muck, peat, swamp mud, and even common earth in a dry state,—and of preventing its escape from stables and yards, by a daily strewing with dried peat, lime or plaster.

The superiority of unfermented manure has just been mentioned, which is by many doubted. But the very facts on which these doubts rest, only prove its efficacy. For, they say, "I have always found fresh manure to be attended with little effect the first year, while it yet remains fresh; but afterwards, when fermentation and decay had taken place, the benefit was great and striking." But here is the proof at hand, that not until the rich, soluble and gaseous parts had well penetrated and been absorbed by the soil, was their powerful and invigorating influence exerted upon the growing plants. Fresh manure is generally in a state not readily mixed with soils; it is thrown into large lumps over the surface, some of which are plowed in and others not, but none of them prove of immediate use to the crops. But on the other hand, fermented manure, from its ready pulverization, admits of an easy admixture. Let fresh manure be thoroughly ground down and worked into the soil by repeated harrowings, and two or three plowings, and its influence will be like magic.

Swamp muck has often been spoken of as manure. But those who expect great and striking results from its application, will be disappointed, as the writer has been. Even with ashes, it is much less powerful than stable manure, not only because it possesses less inherent richness, but because it has less soluble parts, and consequently imparts its strength more slowly to growing plants. But this quality only makes it the more enduring. By decoction in water, vegetable mold loses a small portion of its weight by solution; but if the remaining insoluble portion is exposed to air and moisture a few months, another part may be again dissolved. Thus, peat, muck and all decayed vegetable fibre, becomes a slow but lasting source of nourishment to plants.

But it is, when shoveled out and dried, to be mixed with farm-yard manure, as a recipient for its evanescent parts, that peat or muck becomes preëminently valuable. Some parts of the State abound with inexhaustible supplies in almost every neighborhood; many land owners have from twenty to a hundred thousand cubic yards on their farms, lying untouched, while half-starved crops are growing in the adjacent fields. There are whole counties so well supplied with it, that if judiciously applied, it would doubtless double their aggregate products.

All neat farming, all profitable farming, and all satisfactory farming, must be attended with a careful saving of manures. The people of Flanders have long been distinguished for the neatness and excellence of their farms, which they have studied to make like gardens. The care with which they collect all refuse materials which may be converted into manure and increase their composts, is one of the chief reasons of the cleanliness of their towns and resi-

dences. And were this subject fully appreciated and attended with a corresponding practice generally, it would doubtless soon increase by millions the agricultural products of the State.

But there is another subject of scarcely less magnitude. This is a systematic

ROTATION OF CROPS.—If manuring is the steam engine which propels the vessel, rotation is the rudder which *guides* it in its progress.—Unlike manuring, rotation does not increase the labor of culture; it only directs the labor in the most effective manner, by the exercise of judgment and thought.

The limits of this paper do not admit of many remarks on the principles of rotation. The following courses, however, have been found among some of the best adapted to our State:

- I..1st year—Corn and roots well manured;
2d year—Wheat, sown with clover seed, 15 lbs. per acre;
3d year—Clover, one or more years, according to fertility and amount of manure at hand.
- II..1st year—Corn and roots, with all the manure;
2d year—Barley and peas;
3d year—Wheat, sown with clover;
4th year—Clover, one or more years.
- III..1st year—Corn and roots, with all the manure;
2d year—Barley;
3d year—Wheat, sown with clover;
4th year—Pasture;
5th year—Meadow;
6th year—Fallow;
7th year—Wheat;
8th year—Oats, sown with clover;
9th year—Pasture, or meadow.

The number of fields must correspond with the number of the changes in each course; the first needing three fields to carry it out, the second four, the third nine. As each field contains a crop each, in the several successive stages of the course, the whole number of fields collectively comprise the entire series of crops every year. Thus in the last above given, there are two fields of wheat growing at once, three of meadow and pasture, one of corn and roots, one of barley, one of oats, and one in summer fallow.

OPERATIONS IN THE ORDER OF TIME.—The vital consequence of doing every thing at the right season, is known to every good farmer.—To prevent confusion and embarrassment, and keep all things clearly and plainly before the farmer at the right time, he should have a small book to carry in his pocket, having every item of work for each week, or each half month, laid down before his eyes. This can be done to the best advantage to suit every particular locality and difference of climate, by marking each successive week in the season at the top of its respective page. Then as each operation severally occurs, let him place it under its proper heading; or, if out of season, let him place it back at the right time. Any proposed improvements can be noted down on the right page. Interesting experiments are often suggested in the course of reading or observation, but forgotten when the time comes to try them. By recording them in such a book under the right week, they are brought at once before the mind. Such an arrangement as this will prevent a great deal of the confusion and vexation too often attendant on multifarious cares, and assist very essentially

in conducting all the farm work with clock-work regularity and satisfaction.

In reviewing the various items which are most immediately essential to good farm management, some of the most obvious will be—capital enough to buy the farm and to stock it well; to select a size compatible with these requisites; to lay it out in the best manner; to provide it well with fences, gates, and buildings; to select the best animals and the best implements to be had reasonably; to bring the soil into good condition, by draining, manuring, and good culture; to have every part under a good rotation of crops; and every operation arranged, so as all to be conducted systematically, without clashing and confusion. An attention to all these points would place agriculture on a very different footing from its present condition in many places and with most farmers. The business then, instead of being repulsive, as it so frequently is, to our young men, would be attended with real enjoyment and pleasure.

But in all improvements, in all enterprises, the great truth must not be forgotten, that success is not to be expected without diligence and industry. We must sow in spring, and cultivate well in summer, if we would reap an abundant harvest in autumn. When we see young farmers commence in life without a strict attention to business, which they neglect for mere pleasure, well may we in imagination see future crops lost by careless tillage—broken fences, unhinged gates, and fields filled with weeds—tools destroyed by heedlessness, property wasted by recklessness, and disorder and confusion triumphant; and unpaid debts, duns, and executions, already hanging over the premises. But, on the other hand, to see cheerful-faced, ready-handed industry, directed by reason and intelligence, and order, energy, and economy, guiding the operations of the farm—with smooth, clean fields, and neat trim fences—rich, verdant pastures, and fine cattle enjoying them, and broad waving meadows and golden harvests, and waste and extravagance driven into exile, we need not fear the success of such a farmer—debts cannot stare him in the face, nor duns enter his threshold.

It is such enterprise as this, that must place our country on a substantial basis. Agriculture in a highly improved state, must be the means, which next to the righteousness which truly exalts a nation, will contribute to its enduring prosperity. All trades and commerce depend on this great art as their foundation. The cultivation of the soil and of plants was the earliest occupation of man; it has in all ages been his chief means of subsistence; it still continues to furnish employment to the great majority of the human race. It is truly the great art of peace, as during wars and commotions it has languished and declined, but risen again in strength and vigor when men have lived at peace with each other—it has then flourished and spread, converted the wilderness into life and beauty, and refreshed and adorned nature with embellished culture. For its calm and tranquil pleasures—for its peaceful and healthful labors—away from the fretful and feverish life of crowded cities,—“in the free air and beneath the bright sun of heaven,”—many, who have spent the morning and noon of their lives in the anxious cares of commercial life, have long sighed for a scene of peace and quietude for the evening of their days.

ON THE IMPORTANCE OF DRAINING LAND.

WE remember well the time when the idea of fertility and heavy products was so intimately and thoroughly blended with that of *moisture*, that wherever we saw a piece of land that was constantly *moist*, so that no water laid on its surface, we set down *that spot* as one that would not fail to bring a heavy crop—especially of grass; and we have our doubts whether there was not a time when this was the common impression. Inquiry, reflection and experience are, however, now doing for Agriculture what they have sooner done for other pursuits; and now, fortunately, the *mind is brought to work at every turn*, and empiricism and prejudice are made to give way before investigation and proof. Now the Farmer is taught by the exercise of his reason, and, even without knowing it, by the principles of agricultural chemistry, that a *settled, abiding moisture* in land, resulting from some obstruction to the escape of water, either rain or spring water, is incompatible with that degree of *warmth* which is one of the indispensable conditions to the development and growth of vegetables. Hence, as the Farmer who walks or rides over his estate, and sees a sunken or a low spot, which in the driest weather shows signs of *constant dampness*, indicated by coarse aquatic grasses, or otherwise, he says to himself, 'There is a portion of my capital lying dead and inert. I must therefore contrive so to *drain it* that the water will not *settle* upon or in it, and thus give it life and activity. Then I shall have removed the only obstacle which prevents it from yielding a heavier crop either of *grain* or grass, than any other equal portion of my estate:'—for the Farmer ought to lay it down as a rule, that even where he proposes to lay down his land in grass, it should yet be so well drained as to be well adapted to the growth of *grain*. Land so laid dry, will always give, with equal richness, a better crop of cleaner and more valuable *hay*, than that which is too wet to produce grain. Let him who wants to see heavy crops of clean, nutritious timothy hay, go to the naturally dry, hilly lands, such as George Patterson's, Gov. Howard's, or N. Bosley's, on the Gunpowder, in Maryland. True, there are many fields that are well adapted to the growth, and produce *heavy crops*, of tobacco or grain, that would not yield, and at all events not more than one crop, of timothy, or herd's grass, as it is

called in different parts of the country; but that is owing, not to the absence of moisture, but to some other condition of the land—to too much of one and too little of another kind of soil, and to other circumstances, not to the want of moisture. Moisture, it is undeniable, is essential to the growth of all vegetables, according to the laws of vegetable physiology, but not fixed, pent-up moisture. Its departure, like its coming, should be free and natural. If we appear to dwell too much on this subject (of draining), it is because it is impossible to pass along through the country without being struck with the quantity of land, on almost every estate, the very best land on it, which is made sick and unproductive of all wholesome growths, by circumstances that *prevent the escape of redundant moisture*; and it is among the foremost of our wishes, to see the minds of land-holders possessed of the conviction that it is idle to be sighing and scheming for more land, or repining at the inadequacy of their income, while they have already so many acres that lie waste and unproductive—paying interest but yielding no dividend, for want of draining, grubbing, cleaning and manuring.

At a late meeting of the Scotch Highland Society, at Dumfries, an interesting discussion took place on Draining as "among the foremost" of the means for agricultural improvement. The particular testimony to which we would invite the attention of the reader is that of Mr. Elliot:

Prof. Johnston said—I am quite sure that the general statements which Mr. Elliot has made must have produced an impression upon the meeting. At the same time I know the farmers so well, that I am sure nothing will so much satisfy them, or the landlords either, as showing that the proposed improvement will put money in their pockets (hear, hear). Now Mr. Elliot has drained largely, and I know successfully (applause): you will excuse me, therefore, if I ask what are the results of his own draining? He is one of the most enterprising drainers in Dumfriesshire, and is, therefore, a noble example. I should like him to let the strangers here know what are the results during the eight years which he has been employed in draining? I would ask first, what have been the general results of draining on the whole farm?—how much has it increased the produce?

Mr. Elliot said—I have a statement which shows the improvement. Before, my land was partly wet and partly dry; one-half, nearly, has not been drained; but the principal improvement on the whole has been by draining. The result I will read to you:

PRODUCE OF THE OAT CROP ON THE FARM.		
1st year, 1837.....	4.4	after one sown.
2d " 1838.....	5.6	"
3d " 1839.....	6.5	"
4th " 1840.....	6.8	"
5th " 1841.....	8.4	"
6th " 1842.....	7.6	"
7th " 1843.....	8.5	"
8th " 1844.....	8.3	"

BARLEY CROP.

1st year..... 8.2 after one sown; a small quantity this year sown on a piece of the best land.

2d "	5.4	after one.
3d "	6.2	"
4th "	10.2	"
5th "	10.1	"
6th "	11.7	"
7th "	10.5	"
8th "	11.8	"

Thus showing that I realized by draining an increase of more than double the original produce (Applause).

Professor Johnston.—It appears from Mr. Elliot's statement that he has doubled the produce of oats and barley in eight years. Now I know he can give us farther information. The second question I would ask is this: he has stated that if the whole farm was drained, it would have produced a greater increase. Now, can Mr. Elliot give us the detailed result of one part of the farm—what it was worth when he began, and what it is worth now?

Mr. Elliot.—One moor I drained which every one who knew it declared to be perfectly useless. It was not worth 2s. an acre. There were ninety-one acres of it; and one gentleman present who observed it told me that it never could be improved. I drained it, however, at an expense of nearly £600. A great part of it was covered with water-lilies, rushes, whins, heather, and gall-roots; but the first year, after liming and fallowing, it yielded 3,500 bushels, nearly 40 bushels to the acre (*Applause*). The second crop was equal. This year I have a crop of oats, after turnips, upon 12 acres of it, yielding 46 bushels to the acre; of potatoes I had a heavy crop, and of turnips also a good one (*Applause*). Another moor of 43 acres I drained at an expense of nearly £300. The first crop, after fallowing and lime, gave 42 bushels an acre. This was upon land that was previously not worth 2s. an acre (*Loud applause*.)

In answer to a question from the Chairman, Mr. Elliot said his land was situated at an elevation of about two hundred feet above the level of the sea.

Professor Johnston explained, in answer to a question sent in to him, that four and three-tenths, and so on, occurring in Mr. Elliot's speech, meant that one seed gave four and three-tenths—that where he had only four once, he now got eight seeds off the same land.

By the bye, does it occur to the farmer, that when by *draining*, he doubles the produce of an acre, he doubles the value of his land? that it is far better than getting an additional acre of the same value—because, it takes only *half the labor* to cultivate one acre that it does to cultivate two, and yet he arrives at the same result as to the quantity of produce—in other words, reaps an equal reward, at half the expense? An acre of naturally fertile land rendered unproductive by superfluous moisture, and the crop of which is doubled by draining, is more

profitable than an acre the produce of which is doubled by manuring—because, although the process of draining in the first instance, may be more expensive than that of manuring an acre of poor dry land, yet the manured land will be much sooner exhausted and reduced again to unproductiveness, than that sort of land which usually requires draining. Besides, it is absolutely disreputable for a farmer to have on his estate at every turn, these valuable spots—sometimes one acre—sometimes more, sometimes less—which ask only to be drained to give him the most valuable return for his labor; but which in the condition they are left, throw up worthless or unwholesome grasses, exhale malaria, generate rot among his sheep, and fevers in his family. A friend of ours once observed, "Sir, when I go to see a gentleman farmer, if he does not invite me to ride over his estate and look at his crops, I always suspect it is because it is full of gullies and bogs, and naked and miry spots!"

True, it may be answered that draining is very expensive; and so it is, on a large scale and under many circumstances; but this, with many, is a mere pretext for procrastination and want of enterprise. It might often be effected, as by Mr. SOMERS, a plain farmer below Nottingham, in Maryland, by cutting a common ditch, and in the bottom of it laying two poles, side by side, covering these with cedar brush carefully laid down, and then with sods and dirt, and plowing and sowing over the whole. The increased crop in a single year would pay the expense, besides leaving the land, as in his case, worth \$20 or \$30 an acre for ever after, instead of being a *quagmire*. Who has not remarked that indolence has a very inventive genius of its own when it seeks to excuse itself for its inactivity and love of repose?

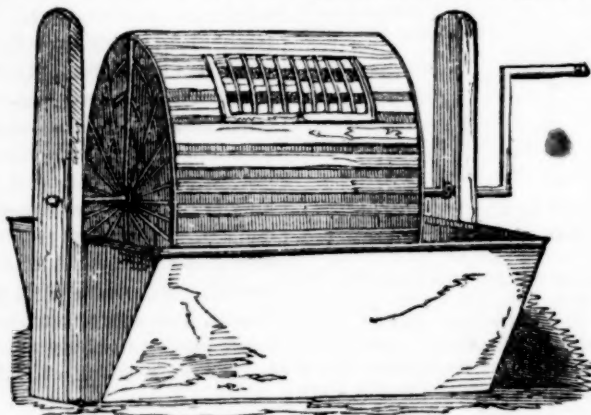
POTATO WASHER.

WE are not aware that the machine or utensil, described below, is generally known, though we are sure it ought to be in general use where any considerable number of potatoes are raised, more especially where they are cultivated for feeding stock. The first we ever saw was brought from Scotland, and the only one except one that we got him to have made after it, and was in use, by Mr. BEVAN, manager for the late estimable R. CATON, Esq., of "*Brookland-Wood*," near Baltimore: a gentleman of uncommon amiability and various knowledge—one who possessed a thousand times more of a spirit to be useful to the country and his fellow men, than many who derided his enthusiasm, without emulating the generous impulses in which it was founded and the useful purposes to which it would have prompted him.

This potato washer is one of the most labor saving contrivances we have seen in operation. True, it seems to be a small affair, but every thing that saves a minute is important in a country like ours, where, above all others, labor is high and "time is money."

The annexed sketch of a machine for wash-

ing potatoes, which is used in Nottinghamshire, may be acceptable to some of your readers. It is easily made by any village workman, and will be found very effectual. It is simply a churn-like cylinder, with open bars placed at such a distance as to prevent any of the potatoes from falling through, except very small ones, the lower part of which as it revolves, passes through a trough of water.



It may be made to be easily unshipped, like a churn, or fixed more permanently, as in the sketch. Where many potatoes are used, or where it is requisite to wash them for starch-making, it will be found a very valuable acquisition.—*M. J. B.* [We have long used a washer similar to that here figured—differing from it, indeed, but in one particular; that one, however, of considerable importance. The arms here represented as containing the sockets in which the axle of the cylindrical frame revolves, are in our machine not vertical and straight, but arched, and terminating in extremities over-

hanging the ground, considerably beyond the cistern to which they are attached; the cylinder, too, revolves not in sockets pierced in these arms, but in Ys at the side of them; and after—by its revolution—the potatoes in it have been cleaned, chains from the extremities of the arms are hooked into eyes on its axle, and as the rotation proceeds, these, winding up on the axle, lift the cylinder out of the water, and bring it to a position overhanging a box or barrow which has been placed beside the cistern. The trap-door being opened, the potatoes fall into this barrow and are easily removed.]

THE INFLUENCE OF PASTURE ON SHEEP REARED ON IT.

BY MR. WILLIAM HOGG, STOBOHOPE, PEEBLESHIRE.

SHEEP, as they exist in this country, have a twofold character—a general character, or what belongs to them as a species, and a particular character, or that temperament of constitution which they derive from the pasture on which they are bred. The qualities essential to them as a species are, producing wool each year after being one year old, shedding two incisor teeth, cloven-footed, wild; for domestication is an artificial state, effected only after considerable intimacy, and tasting of human food—this reconciles sheep to human company and human kindness, and disposes the creature to look to man for help in every emergency. These inherent peculiarities belong to sheep as a species. Before tracing their connection with the pasture, it will be necessary to state that pasture may justly be considered as of two divisions—dry, firm, lea pasture, often less or more intermixed with heath. This soil produces the finer grasses, though not in great abundance; the animal which it rears is small sized, of a compact form, hardy, excretions of all kinds small, constitution sound, considerable flow of animal spirits, not easily overcome with privations, and, as the

system in all its parts is, as it were, crowded together, it is subject to inflammatory diseases, whether raised by external injury or by the suppression of its natural evacuations. Another description of pastures are such as are spread out on an easy, downy surface. Here flourish all the strong coarser grasses, with a good part of those found in the former division; but they are here rough in the stem, and hold far more fluidity—all the plants peculiar to a damp, deep soil arrive here at perfection, and a soft, lathy quality pervades the whole. The animal here feeds to excess—viscera increase to a great size and weight—the carcass is large, loose, and incompact—staples of the wool generally long, inclining rather to coarseness, if pains be not taken to keep the fleece pure—not much animation—and, for the most part, in their fifth year, swell out to a great belly. The constitution does not now become invariably unsound, it rather becomes unwieldy, and burthensome for the animal to search for and gather its food; evacuations at all times profuse, and that natural purgation common to all sheep in spring is here apt to be continued well into summer, which not a

little delays the animal's mending. The diseases peculiar to such a constitution and such a pasture are of a plethoric description. If the spirits are broken by any misfortune, ill-usage, [fright by dogs] or a severe winter, the rot, with all its enfeebling symptoms, appears. Should this disease not manifest itself, yet the creature falls into an unprosperous, unthriving condition, having slight signs of sundry diseases though the exclusive symptoms of none. It, however, turns useless and dies. From these facts it must not be surmised that I suggest this as the common fate of entire stocks bred on soft pastures. Though the constitution is far from being unsound, yet it is quite inferior to those reared on the first division: it is not so strong and hardy. The soft constitution is burthened with infirmities and disabilities which the former is altogether unconnected with, and an interruption of thriving, which ill-usage or ill seasons bring on individual sheep of this constitution, generally terminates in the rot, or ailments similar to it.—Again, almost each distinct pasture gives a tinge to the fleece; this tincture is generally attributed to the color of the upper stratum of the soils: and, when we consider how assiduously thriving sheep amuse themselves on disruptions or openings of the stratum, this cannot be doubted; yet there is an imbuing quality in the herbage which communicates a tinge to wool independent of that inserted into it by friction; but whether this is produced by the quality of its food after being eaten, or is imparted to the wool as the animal traverses its pasture in search of food, I can scarcely determine. But pasture exercises an almost uncontrollable power over the shape. If it does not interfere too much with the breed, the pasture will adjust the size to what it can itself support; but how it determines the external shape remains as yet unaccounted for. In some cases the shape is unexceptionable, that is, the figure, motion, and mien of the stock indicate strength, spirits, and health; in others, it is ill-proportioned or defective in those points which ensure animation and activity.—The most common as well as the most hurtful defects are, low and thin in the fore quarters, coarse and lumpish in the posteriors, narrow or sharp-backed—its gait oblique and ambling, splay-footed, &c. Though the last two are conspicuous among individuals, they can scarcely be said to be peculiar to a stock in general, but the obstinacy with which any of these defects resist a change for the better indicates they are communicated by the soil, are interwoven with the constitution, and, if strenuous and uninterrupted means are used for their removal, they may, in a small measure, disappear, or the distinguishing peculiarities of the deformity not be so strongly marked. But, rather than relinquish the animal altogether, if vigorous exertions are still made for their utter suppression, the constitution not unfrequently yields with the struggle—it falls into an unprosperous, sickly state, and, finally, ends in being an unprofitable, useless creature. Indeed, man, for no end whatever, regularly and constantly interferes with the propagation of sheep, though accession of fresh blood be necessary at times, for keeping the animals healthy, recruiting the spirits, increasing animation, &c.; yet an often transmission of *new blood* [crossing with a different breed] into the progeny prevents the spirits from acquiring a permanent and steady flow or the body from settling into a fixed and useful proportion of strength. From an actual survey of

the position, altitude, and qualities of such an extent of hill-pasture as is generally set off as a sheep-farm, one accustomed to the rearing of sheep stocks, and to notice the connection which exists between the animal and its pasture, may discover with tolerable certainty whether the constitution will be hardy or sickly—whether of a large or small bone—whether yield a scanty or abundant fleece; and, from these peculiarities, may be enabled to say, with an accuracy which may be depended on, and which will be found in general to be correct, what are the most prevalent diseases to which the stock is liable; but the properties in the soil which so forcibly confer the external figure have never yet, that I know, been discovered. Wherever that plastic power resides, I am convinced that the way and manner which the sheep accustom themselves to, in pasturing their allotted range, has not a little influence in forming the exterior shape; and it is certain that the method of pasturing is regulated by the soil, so that still the qualities of the pasture lie at the foundation of all peculiarities, whether natural or acquired; but yet an uneasy manner of collecting the food, if continued in for a length of time, may come in to the aid of those occult qualities in the soil which give the shape, and enable them to act with greater and more certain vigor. It may be thought that, if the figure of each individual in the stock is unexceptionable in its first application to the pasture, there will be no difficulty in perpetuating this shape almost to any length of time; the reverse, however, is certain. The pasture may accord with the proper figure—may support it in its most important points; but if an adverse property reside in the pasture, *it will imperceptibly alter the original form, by imposing on each successive crop of lambs that mould and manner which it is its own exclusive property to give.**

There is a train of circumstances which never fail to alter the true shape, not only of the subject on which they immediately act, but also on their progeny. Suppose an individual sheep, or say stock of sheep, are reduced very low in habit by the sufferings of a severe winter: First season they somewhat shrink from the true figure; but suppose, as is often the case, that for two or three seasons the same privations continue, the departure from the true figure is evidently on the increase, is transmitted to the issue, and the deformity becomes in a sense habitual, though not in so absolute a degree as that which the soil imposes. In this case, if good seasons and prudent management coöperate, a restoration of the right shape is possible; but to establish a true and fashionable form on a stock whose plastic influence seems to confirm a defect in the shape is impossible. The change of stocks from the Heath to the Cheviot breed has not a little altered the disposition, look, and manner of sheep; but when all traces of the former are completely obliterated, and the peculiarities of the latter startlingly confirmed, what reprehensible points the pasture was the cause of in the old breed are still found to be blemishes in the new. From the above notices, it may be inferred that the proper figure and shape of some stocks can with far greater easiness be brought to a just proportion of parts, and kept at them

* So, too, we have maintained as to grain, tobacco, fruit, &c.—Nature will not be forced; soil and climate will force things connected to them to alter their nature to suit them while they remain unchanged.

[Ed. Farm. Lib.]

as a right standard, than others where the qualities in the soil operate to the production and continuance of defects. This is found in fact to be the case. Some stocks require little attention: others, if the manager make strenuous and incessant endeavors to establish a useful figure, may, perhaps, enfeeble the whole system by too frequent accessions of new blood; for, to continue sheep profitable, healthy, and beautiful, the line should not be too often disturbed with intromissions from other families, however pure.

To write ever so explicitly on this subject

can convey no perfect notion to another person's mind of the dissimilarity which exists between sheep stocks reared on different pastures; one single look over them would make the idea more distinct, and more certain of the inequality, than any words can convey; but the fact that each pasture impresses its peculiar shape, air, and manner, need not be doubted, and this unlikeness exists after every safe method is taken to bring them to a uniformity.

Jour. of Highland and Agr. Soc. of Scotland.

MASSACHUSETTS SAVINGS INSTITUTIONS.

THERE are in Massachusetts forty-one institutions for savings. The returns of these institutions are made up to the 30th of September, 1848, and show the following aggregates:

Number of Depositors	69,894
Amount of deposits	\$11,970,447 64
Public funds	1,372,622 89
Loans on public funds	25,600 00
Bank stock	2,025,721 91
Loans on bank stock	173,740 00
Deposits in banks, bearing interest	91,862 44
Railroad stock	89,527 99
Loans on railroad stock	309,925 00
Invested in real estate	92,935 10
Loans in mortgage of real estate	4,171,483 67
Loans to county or town	1,424,086 56
Loans on personal security	2,410,171 68
Cash on hand	152,964 41
Rate and amount of ordinary dividend for last year	461,774 88
Average annual per centage of dividend last five years	5 66
Annual expenses of the institutions	36,404 96

How numerous and frequent are the sources of instruction to men who once acquire the *habit of thinking*!—a habit far more important and more rare than most people apprehend.

These "Savings Institutions" in Massachusetts, in which are deposited \$11,970,447, by very nearly 70,000 people, are over and above the regular *banking* establishments, both of which are *scattered all over* the State, so that any industrious and ingenious man can borrow the means of "setting up" any new business, which for the most part consists in manufacturing something for the supply of the Southern man, who has at home much greater facilities—that is *natural* facilities—for manufacturing them for himself—*except* that he—the Southern man—is taught from his cradle to hate banks, and manufactories, and combinations of skill and capital. Hence he is thrown for ever more and more in the power of those whose sagacity teaches them to favor the combination of individual skill, and strength, and money. Hence these numerous banks, and savings-banks, and factories, all over New England. Hence concentration, thickening of population, increase of wealth and power—hence it is that when in New England you see a plough at work in the field, if you cast your regards over the horizon, within view, you can see the steeple of a church, a neat school-house, and a village where people are at work at the loom and the anvil, ready to demand the products of the plough, the harrow, the orchard, the garden, and the dairy; and the farmer makes his exchanges without loss, by good roads, and he consumes more of the produce of the loom and the anvil, while the weaver and the smith consume more of the products of the plough and the harrow, because all get their supplies and make payments, with vast economy of time and money. Oh that Southern farmers would but *think* for themselves, and not permit demagogues to think for them!

PARASITICAL PLANTS.

I HAVE heard a curious idea advanced, that all mucilaginous seeds must undergo the process of passing through the stomach of birds before they will vegetate. This was particularly asserted with regard to the seeds of the mistletoe.

The first introduction, and the subsequent growth of this parasitical plant, are wrapt at present in much mystery. Many persons suppose that birds are unintentional planters of the mistletoe, by rubbing or cleaning their beaks, after they have been partaking of its mucilaginous seeds, against the branch of a tree.

Various attempts have been made to propagate the mistletoe, by depositing the seed between the forks of trees, and by inserting it in the bark; but they have hitherto failed. The seeds also of the ivy seldom grow, though planted with the greatest care, even under walls; yet, if dropped by birds upon, or even in the crevices of walls, they will grow spontaneously and thrive luxuriantly; and this is one of the circumstances which have led to the supposition that the seeds of the mistletoe and ivy must undergo some process, favorable to their germination, in passing through the stomach of birds.

Mr. Knight, the intelligent florist in the King's Road, informed me that, having been requested by a lady to endeavor to preserve a favorite mulberry-tree, which for many years had flourished on her lawn, but which, with the exception of one very large branch, was either dead or decaying, he waited till the sap had ascended, and then barked the

branch completely round near its junction with the trunk of the tree. Having filled three sacks with mould, he tied them round that part of the branch which had been barked, and placed above them one or two old leaky watering-pots which were kept constantly full of water, which gradually distilled from them, and rendered the mould in the sacks sufficiently moist for his purpose. Towards the end of the year he examined the sacks, and found them filled with numerous small fibrous roots, which the sap, having no longer the bark for its conductor into the main roots of the tree, had thus expended itself in throwing out. A hole having been prepared near the spot, the branch was sawn off below the sacks, and planted with them, the branch being propped securely. The next summer it flourished and bore fruit, and is still in a thriving state.

Hearing this fact, I was led to examine the small round mossy substance frequently attached to the branches of the dog-rose in our hedges, which I had often admired, but been unable to account for. I found that, in consequence of the bark on the branch on which it is fixed being removed by some insect, the sap in receding throws out roots; these, from exposure to the air, produce the mossy ball in question, which becomes the nest or hybernaculum of the insect.* This idea might be followed up practically in this country, as I have lately heard it is in China; and the more uncertain method of grafting or budding to increase our stock of plants might be abandoned.

WILD-FOWL.

THE Cape geese, which are kept in the large ponds in Richmond Park, used to have their nests on the island in one of those ponds. In consequence, however, of their eggs having been frequently destroyed by the rats, they took to building in some oak pollards, near the water, from whence they conveyed their young in safety. I have questioned the keepers as to their mode of doing this. Their opinion is, that the old birds get the young under their wings, and then descend the tree. It is more probable, however, that they carry them one by one in their mouths. I knew an instance of a wild duck, who had its nest in a poplar-tree, which overhung a piece of water, in Staffordshire, and who thus con-

trived to convey its young with safety to the water.

The history of wild ducks is curious. In consequence of the drainage of the Lincolnshire fens, the quantity which visit them is much diminished, and many of the decoys are abandoned. In 1765, an extraordinary flood prevailed, when most of the Lincolnshire fens were inundated. The decoy at Heckington, near Sleaford, was that year visited by incredible quantities of ducks—the average number taken during the season being 400 dozen, or 4800 a week. They appear

* If this mossy substance be examined, the larvæ of an insect will be found belonging to the genus *cynips*. Another species produces the gall-nut; and the birch-tree is subject to a similar disease.

to quit this country in the spring, and to return about the time of harvest, although some breed in low and retired situations, and occasionally in meadows. These birds, however, would seem to have different habits from those which migrate. If the eggs of a wild duck are placed under a common duck, the young, when hatched, immediately exhibit the perfectly wild nature of their origin, and hide themselves with won-

derful cunning. If old ones are caught and pinioned, they are, I believe, never known to breed. In the *tidal* waters of the estuaries of the Lincolnshire coast, they are shot in hard weather by men who approach them, lying flat in small boats called "*gunning shouts*," carrying very large duck-guns. The charge is a pound or a pound and a half of shot. One man was known to kill £200 worth of ducks in one season.

FRIENDSHIP OF ANIMALS.

"'Tis often seen
Adoption strives with nature."—SHAKESPEARE.

ANIMALS which are unable to associate with their own species will sometimes form most strange attachments. I had last year a solitary pigeon, which being unable to procure a mate, attached itself to an old barn-door fowl, whose side it seldom left at night, roosting by him in the hen-house. The cock seemed sensible of the attachment of the pigeon, and never molested it, or drove it from him. I had also a tame hedgehog, which nestled before the fire on the stomach of an old lazy terrier dog, who was much attached to it, and the best understanding existed between them. I have also seen a horse and a pig associate together, for want of any other companions; and Gilbert White mentions a curious fact of a horse and a solitary hen spending much of their time together in an orchard, where they saw no creature but each other. The fowl would approach the quadruped with notes of complacency, rubbing itself gently against his legs; while the horse would look down with satisfaction, and move with the greatest caution and circumspection, lest he should trample on his diminutive companion.

At Aston Hall, in Warwickshire, I remember to have seen a cat and a large fierce bloodhound, who were always together, the cat following the dog about the yard, and never seeming tired of his society. They fed together, and slept in the same kennel.*

A gentleman residing in Northumberland assured me that he had a tame fox, which was so much attached to his harriers, and they to him, that they lived together, and that the fox always went out hunting with the pack. This fox was never tied up, and was as tame, playful, and harmless as any

dog could be. He hunted with the pack for four years, and was at last killed by an accident.

But a most singular instance of attachment between two animals, whose natures and habits were most opposite, was related to me by a person on whose veracity I can place the greatest reliance. He had resided for nine years in the American States, where he superintended the execution of some extensive works for the American government. One of these works consisted in the erection of a beacon in a swamp in one of the rivers, where he caught a young alligator. This animal he made so perfectly tame, that it followed him about the house like a dog, scrambling up the stairs after him, and showing much affection and docility. Its great favorite, however, was a cat, and the friendship was mutual. When the cat was reposing herself before the fire, (this was at New York,) the alligator would lay himself down, place his head upon the cat, and in this attitude go to sleep. If the cat was absent, the alligator was restless; but he always appeared happy when the cat was near him. The only instance in which he showed any ferocity was in attacking a fox, which was tied up in the yard. Probably, however, the fox resented some playful advances which the other had made, and thus called forth the anger of the alligator. In attacking the fox, he did not make use of his mouth, but beat him with so much severity with his tail that, had not the chain which confined the fox broken, he would probably have killed him. The alligator was fed on raw flesh, and sometimes with milk, for which he showed a great fondness. In cold weather he was shut up in a box, with wool in it; but, having been forgotten one frosty night, he was found dead in the morning. This is not, I believe, a solitary instance of amphibia becoming tame, and showing a fondness for those who have been kind to them. Blumenbach mentions

* The Godolphin Arabian, the great root of the bred-horse stock of England, formed a strong attachment to a cat, so that both portraits appear on the same print.—Eds. P. L. & A.

that crocodiles have been tamed; and two instances have occurred under my own observation of toads knowing their benefactors, and coming to meet them with considerable alacrity.

Colonel Montagu, in the Supplement to his Ornithological Dictionary, relates the following singular instance of an attachment which took place between a Chinese goose and a pointer. The dog had killed the male bird, and had been most severely punished for the misdemeanor, and finally the dead body of his victim was tied to his neck. The solitary goose became extremely distressed for the loss of her partner and only companion; and probably having been attracted to the dog's kennel by sight of her dead mate, she seemed determined to persecute the dog by her constant attendance and continual vociferations; but, after a little time, a strict friendship took place between these incongruous animals. They fed out of the same trough, lived under the same roof, and in the same straw-bed kept each other warm; and, when the dog was

taken to the field, the lamentations of the goose were incessant.

Some animals of the same species form also strong attachments for each other. This was shown in the case of two Hanoverian horses, who had long served together during the Peninsular war, in the German brigade of artillery. They had assisted in drawing the same gun, and had been inseparable companions in many battles. One of them was at last killed; and, after the engagement, the survivor was picqueted as usual, and his food brought to him. He refused, however, to eat, and was constantly turning round his head to look for his companion, sometimes neighing as if to call him. All the care that was bestowed upon him was of no avail. He was surrounded by other horses, but he did not notice them; and he shortly afterwards died, not having once tasted food from the time his former associate was killed. A gentleman, who witnessed the circumstance, assured me that nothing could be more affecting than the whole demeanor of this poor horse.

MANUAL OF MANNERS.

THE DEMEANOR.

ONE of the maxims of Goethe was, "Respect for self governs our morality—respect for others, our behavior." Though possessing the brightest mental endowments, one is apt to be overlooked in society, if the proprieties of the demeanor are not attended to. It is not meant, however, that the external deportment should be studied in preference to the improvement of the mind; but that both should be cultivated together. On this point it may be sufficient to say, that, while a genteel address and polite air are absolutely essential to the demeanor, to secure at once admiration and esteem; it is the improvement of the mind which should adorn the deportment.

The ladies, owing to their natural desire to please, aided by their agreeable manner and courteous address, have always an amiable and attractive appearance. Women possess more refinement, tact, and delicacy, and are certainly gifted with a nicer discrimination than the stronger sex; they have a finer perception of the correct, and are quicker in detecting the weak points in the character and deportment. An easy, unrestrained demeanor, so far from being an encroachment upon nature, as we may sometimes hear remarked, is nothing more than what may be called "free nature's grace."

It should always be kept in mind, that

every person has a right to courteous treatment. This we claim for ourselves, and should be willing to concede to others, as their due. Democritus, who was known as the laughing philosopher, recommended to every one "to have honey within and oil without;" meaning, doubtless, to have a good temper in the disposition, and good manners in the life—an excellent advice, and which, if acted upon, would prove permanently conducive to one's tranquillity and comfort.

One of the first attributes of demeanor is a modest deportment, which adds lustre to the brightest accomplishments. Without modesty, beauty fails to charm. It is indeed the brightest gem possessed by woman, and an essential part of the character of a well-bred man. It may be said to form a safeguard to the other virtues; for no man would offer insult to a woman, if he did not find encouragement in her own free demeanor.

Presumption, equally with rudeness, is strenuously to be guarded against. An arrogant look never gains esteem; and the most unassuming persons in society are generally those whose merit is the greatest. Avoid every indication of vanity and self-conceit; and, in the presence of others, never betray any expression of weariness or indifference, for to do so is a proof of vulgarity.

On the Continent, the proper cultivation of the demeanor, as a distinct branch of education, is one of the first things taught to a child. In this country, the economy of the manners is not paid so much attention to as its importance to society deserves.

While on the subject of the demeanor, we shall say a word or two regarding affectation. This is a deviation from, at the same time that it is an imitation of nature. It is the effect of bad taste, and of mistaken notions of one's own qualities. The other vices have each a particular object, but affectation pervades and renders disagreeable the whole conduct and behavior. Beauty itself loses its attraction when disfigured by affectation. Even to copy from the best models is wrong, because the imitation can never be so good as the original. Counterfeit coin is not so valuable as the real, and, when discovered, it cannot pass current.

In religion, affectation, or, as it is fitly called, hypocrisy, is reprehensible in the highest degree. However grave be their deportment, of all affected persons, those who, without any real merit, make too great pretension to piety, are certainly the most culpable. The mask serves to conceal innumerable faults; and, as has been well remarked, a false devotion too often usurps the place of the true. The conduct of people, which must be taken as an evidence of their pretensions, ought at all times to be conformable to their profession. "When God alone is all we are concerned for, we are not solicitous about mere human approbation."

Vanity is inexcusable; it not only corrupts the manners, but it tends also to debase the morals. Ridicule cannot make it more odious than it is. It has only one good point, and that is, that it serves to console its possessor with the thought that he deserves better than he receives.

Affectation in old age is peculiarly disagreeable; yet many cannot alter their habits with their years, or suit their conduct to their change of circumstances. It is humbling to see persons with gray hairs affect youth and gaiety. They only render themselves ridiculous by attempting to dazzle by unsuitable pretensions, when their season is past. Many carry this feeling, or rather this failing, so far that they will even deny their age, when the wrinkles on their forehead betray it but too plainly.

If you wish to possess the good opinion of your fellow men, the way to secure it is to be actually what you pretend to be, or rather to appear always precisely what you are. Never depart from the native dignity of your character, which you can only maintain irreproachable by being careful not to

imitate the vices, or adopt the follies of others. The best way, in all cases, you will find to be to adhere to truth, and to abide by the talents and appliances which have been bestowed upon you by Providence.

Amongst strangers maintain an easy reserve, and be not too free even with friends. Be polite to all, but familiar with none; and on every occasion grant to others the same indulgence which, in the same circumstances, you would claim for yourself.

OUTWARD APPEARANCE.

The neglect of the outward appearance indicates either a little mind, or a disregard of the opinion of your neighbors. One should always be neat and clean in person and in dress, because this is an evidence of respectability. No man who has any regard for himself, or any respect for the society in which he moves, will be slovenly in his appearance or careless in his attire. It is true, there is a danger of being too particular; but every one is entitled to follow his own taste as to dress, provided he dresses suitably—that is, according to his age, circumstances, and station in society. Foppery ought, in every respect, to be guarded against.

It is ridiculous to see the absurd figure which some thoughtless persons make of themselves by being too gay in their apparel. All unnecessary ornament and decoration of the person, in men particularly, should be carefully avoided. A superfluous display of rings, chains, and other articles of jewelry, is no proof of gentility or of wealth. In most instances it is a sure sign of vulgar breeding or vanity; as is also the practice, much more honored in the breach than the observance, of using scents and perfumes to an immoderate degree. What is fashionable is not always genteel, just as what is genteel is not always fashionable; and one may be in the mode without any vain show in appearance or over-nicety in dress.

The young of either sex, but particularly the female, ought to regard their external deportment and appearance as to a certain extent essential to character. To dress simply and without ostentation, is a mark of modesty; and it will be sufficient to some ladies merely to hint, that too much finery often draws attention to features which, in themselves are perhaps, not particularly attractive. But, in endeavoring to avoid every thing like display, young ladies especially should be careful not to fall into the opposite extreme—that of prudery. There is more sincerity, if there is less nicety, in the conduct of a really virtuous woman than there is in that of a prude; and some degree of freedom, so far from being incompatible with the strictest virtue, is one of its principal privileges.

THE WHOLE DUTY OF WOMAN.

COMPLACENCY.

TIMOROUS as the tender fawn, pliant as the bending osier, gentle as the young turtle, and affable as courtesy itself, is the daughter of complacency.

She maketh friends wherever she goeth; she is loved by all the children of men.

Her behavior winneth the stranger, and endeareth her to those of her acquaintance.

Do her steps lead to the house of mourning, she cometh not in dancing; neither doth the lightness of her heart disgust the wedded to calamity.

She weepeth with those that weep; she laugheth with those who laugh; she singeth in the house of gladness, and rejoiceth in the joy of her neighbors.

She giveth not her advice to the stranger, nor openeth her lips among a crowd of visitors till after the rest have spoken.

She fashioneth her behavior to the model of others; wherefore all must approve the resemblance of themselves.

In the strait betwixt two, she is silent; she divulgeth not herself, that either may know to condemn or approve.

Art thou deceived, she will mildly endeavor to set thee right; but if thou art forward to be instructed, she will permit thee to enjoy thy opinion undisturbed: so shalt thou praise her when thou findest out thy error for having so modestly left thee in thy deception.

She is the sister of moderation; she denieth none the privilege of thinking for themselves.

She urgeth not belief where a doubt is remaining, nor denieth a scruple the power of conviction.

Dost thou admire her steps; wouldst thou reap the advantages thereof; yet be cautious lest she lead thee astray.

Follow not a multitude till they lead thee into evil, nor fear to draw back when thy sister goeth wrong, though she be offended at thy singularity.

Be not over courteous, lest thy modesty suffer; fear not being accounted unfashionably virtuous, lest thou afterwards reproach thyself.

Better is the reviling of the world to the innocent, than the reflections of self-reproach to the guilty.

Complacency will endear thee to the world, but virtue to thyself and thy Creator.

The love of many bringeth gladness to the heart; but happiness is only the companion of the upright.

ELEGANCE.

As the diamond is an ornament to beauty, so is elegance to the behavior of a woman.

Art thou modest—art thou chaste—is thy reputation unsullied—is thy fame spotless as the new-fallen snow—yet elegance will make thee still more worthy admiration.

As the crow or the raven, which devours carrion on the hills of the north, differs from the singing bird of the Canaries, so differeth the elegant woman from her that is wanting therein.

As the elegance of dress adds grace to beauty itself, so delicacy in behavior is the ornament of the most beautiful mind.

Discover not the knowledge of things it is not expected thou shouldst understand; for, as the experience of a matron ill becometh the lips of a virgin, so a pretended ignorance is often better than a show of real knowledge.

Undistinguished levity giveth hourly offence, and the form of solemnity becomes unseemly when it lasteth too long.

Is there a word that will offend; is there a tale thy companion chooseth not to hear; avoid it in thy discourse; so shall she honor thy prudence and applaud thy good nature.

Art thou lettered, let not the difficulty of thy speech puzzle the ignorant, lest, instead of admiring thy knowledge, they condemn thee for pride and affectation.

Yet let thy words be choice as the matter of thy speech, nor pervert the elegance of thy phrase to suit the gross apprehension of the weak and injudicious.

Perspicuity will never force thee to be indelicate, or to forget thou shouldst support the elegance of a woman.

Let thy actions be proportioned to thy speech; so shalt thou gain respect; for whoso setteth a watch over the breath of her, lips will preserve the work of her hands free from blame.

FRUGALITY.

GIVE nothing foolishly away.

Whoso scattereth abroad, will find herself the loser; who throweth her substance away, shall lift up her hands empty in the day of necessity.

The hand which lavishly distributeth its goods will at length close its fingers in emptiness.

Profusion lasteth not for ever; the daughters of riot will become the children of poverty.

Who streweth her money in the streets is not generous; who giveth it vainly away is as guilty of waste.

Hast thou enough, preserve it for thine own use; hast thou too much, bestow it, that those who merit may not want bread.

What thou bestowest on the deserving, is not the voluntary gift of thine hands, but a debt thou owest, and art bound in justice to pay.

The meritorious are entitled to thy superfluities: if thou keepest it from them, thou committest an act of injustice, and wrongest thy neighbor of his right.

If thou givest it to the undeserving stranger, thou givest away the property of another; it is no charity.

Sayest thou these things are mine, I may use them as I list:

Canst thou employ them to thy comfort, thy honor, or thy advantage, thou hast then

no superfluity; if otherwise, they are not thine: they are put into thine hands for the use of others, and they will be required of thee.

Be frugal, therefore, in that which thou employest for the use of those who need, as in that which thou keepest for thyself.

Waste not the substance of the deserving poor, nor wrong him of his inheritance.

His merit is a right, and as just as thy immediate possession.

Who hath riches that are a burden to herself, she is not frugal.

Doth she waste them by hoarding them in secret; doth she cast them away in riot and profuseness; she cheateth herself, and abuseth her trust: for the miser and the prodigal defraud both the world and themselves.

ROSES.

In cultivating roses, nothing delights in rich soil more than this handsome flower. They should always be planted in a composition of stiff loam, rotten dung, night soil, and leaf-mould. Where roses have grown strong after three or four years' standing, they may be taken up, the ground well renewed, the roots close pruned, as well as their shoots very much thinned, and then planted in the same situation—they will then produce as fine blooms as when first transplanted from the nursery. This should always be done in the early part of November. Roses bloom well the first year after being transplanted, if carefully attended to. They should, when transplanted, have a strong stake attached to each standard to preserve them from the wind moving them, and then well mulched round. During the winter, the ensuing spring and summer, they should be plentifully supplied with liquid manure.

In pruning roses, the following observations are useful. With the exception of Teas and Chinas, December and January are considered the best months for pruning; many sorts, such as the Hybrid Chinas, Hybrid

Bourbons, with some of the strongest growing Noisettes and Bourbons, require very little pruning; about every third year they should be pruned in close, so as to make them produce new wood, and to prevent the plants getting too old and ugly in appearance. The Persian Yellow requires merely to have just the top of the shoots taken off, it being found to flower only on the last year's wood. Another excellent plan for Standard Hybrid Chinas, many of the Pillar roses, and Standard Climbers, is to prune them in quite close, just after they have done flowering: they will then produce new shoots the same summer, and flower abundantly the next season. February and March are considered the best months for pruning Teas, Chinas, and Bourbons.

For protecting roses when planted out on their own roots, such as Teas, Chinas, and Bourbons, dry Moss, Fern, or small Spruce Fir boughs, may be stuck round the plants, which will very much protect them from sharp frosts; also, the crown of the roots should be covered with rotten manure early in December, which should be dug in the following spring.

MULTITUDE OF BEINGS IN THE UNIVERSE.

On our globe there are supported at least 800,000,000 of human beings; but it is capable of supporting twenty times that number, or sixteen thousand millions, if all its desolate wastes were cultivated and peopled. Besides man, there are numerous orders of other sensitive beings; there are at least 500 species of quadrupeds, 4000 species of birds, 3000 species of fishes, 700 species of reptiles, 50,000 species of in-

sects, besides thousands which the microscope alone can enable us to perceive—at least sixty thousand species in all. If every species contain about 500,000,000 of individuals, then there will be no less than 30,000,000,000,000, or thirty billions of individuals belonging to all the different classes of sensitive existence on the surface of our globe.